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THE SOUTH PARK SYSTEM OF CHICAGO

Too Far Removed From Congested Centres—All Sorts of Games for All Sorts of People – Band Concerts for the Multitude Civil Service in Administration Affairs—Direct Labor System Employed in Maintenance

By William E. Leonard

IN the evolution of cities that function latest in emerging is the recreative. More or less provision is made for commerce and manufacture, for schools and churches, and for the various social activities, but the public parks as recreative agencies are given thoughtful consideration only when, in too many cases, the limits of the city have made impossible the best results. Chicago furnishes no exception to this general rule. With the lake front to the east and the prairies to the west, what more was needed?

Out of this, too recently felt need, has come the present park system—a system which, when completed, will belt the city with a series of parks and connecting boulevards. Like the city itself, the park system is divided into three sections—north, west and south—each geographically independent of the other, and yet related to each other as a whole. Each has its own set of commissioners, responsible, not to the city, but to the State of Illinois, insuring to each system an individuality of its own.

THE SOUTH PARK SYSTEM

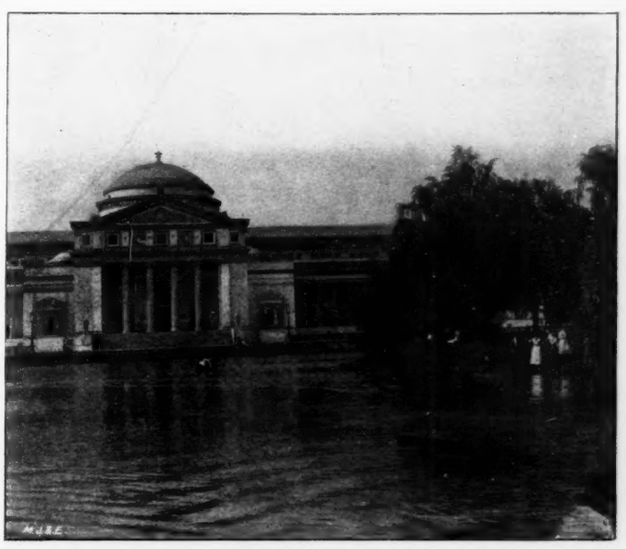
This paper concerns itself with the South Park system only. The small Lake Front Park, adjacent to the Auditorium and Jackson avenue, which is in the same region, falls within the limits of this system, also Michigan avenue, Grand and Drexel Boulevards leading southward and terminating in Washington and Jackson Parks, the two principal parks of the South Side. These two parks are practically one, being connected by the now famous Midway Plaisance, which is possibly less than three-fourths of a mile in length. They also lie parallel to each other. The former contains 371 acres, and the latter 586 acres, and together with the Midway the area amounts to 1,042 acres, which is about one-third the area of Fairmount Park, Philadelphia.

It is important to note that these parks are more than fifty blocks—probably six miles—from the center of densest population. To most of the inhabitants these parks are blessings of which they cannot avail themselves. The distances are too great to walk, and so the householder, who already has a hand-to-mouth struggle, can ill afford, even by car, to give his family of three, five, or even more, a day's outing in the parks, however much their physical condition would be benefited thereby. Thus such families—and there are thousands of them—rarely, if ever, see the splendid parks provided for them.

PARKS TOO FAR FROM CONGESTED CENTRES

In regard to this point of inaccessibility Professor Zueblin, of the University of Chicago, said: "Between 600,000 and 700,000 people live more than one mile from any large park. The most serious aspect of this is that this deficiency of park space is found in the regions most crowded. Eleven wards, containing 1,814 acres of park space, have a population of 425,000 people, or 224 persons per park acre, while the remaining twenty-three wards with 228 acres of park space have over 1,000,000 people, or 4,720 persons per park acre."

Against this defect the commissioners are making slow headway. Those of the South Park have recently added forty acres not far from the stock yards region, and besides they are developing 160 acres between the Illinois Central railroad and the breakwater. Twenty-five acres of this land have already been reclaimed by filling in at no great cost, but this method of park making is very slow. These two extensions of the South Park can only in part supply the need of additional park space. The proposed plan to reclaim land along the lake shore from the Auditorium south to Jackson Park, making it into a magnificent boulevard, with recreation piers and play grounds, when realized, will fully settle the question of adequate park space in Chicago.



SECTION OF THE FIELD MUSEUM—JACKSON PARK

As to physical outline, occupying as they do, level land, there must of necessity be many similarities. To have raised or depressed the land into hills and valleys, while giving variety, would have certainly been unnatural to the prairies of Illinois, and so the commissioners have made the most of the level land at their disposal. The presence of water for lagoon purposes is common to both parks—in Jackson Park this is the distinctive feature, while Washington Park has as its distinctive feature a broad central area called the meadow. Around this meadow, which is intended as an open for all sorts of athletic sports, are the various drives and walks. The value of Jackson Park is further enhanced by the presence of the Field Museum representing collections of great worth. This, on certain days, is thrown open to the people without fee, and has thus become a source of education to the people frequenting the park.

IMPROVEMENTS MADE BY DIRECT LABOR SYSTEM

A notable feature of the Chicago parks is the system of direct labor in which the service of the contractor is largely dispensed with. This system has been in vogue since the establishment of the parks. The range of public activities now covers such works as road building, construction of sewers and concrete walks, and grading operations generally. For this work contracts are let for the delivery of the material on the ground, but the work itself is done by park employees. Contracts are let for only such work as cannot, in the nature of the case, be done by the regular workmen. The varied details of park maintenance, which, of course, are performed by direct labor, comprise such work as making flower gardens, lawns, drives and walks, beautifying the water courses, planting trees, opening new roads, building and maintaining bridges, and so forth. There are certain advantages of this system of direct labor over the contract system. First, it enables the commissioners to make improvements at their actual cost, thus saving the contractor's profit; second, the materials used in construction are always of the best, there being no contractor's temptation to use inferior material; third, the improvements may be made just when they are needed, but under the contract system delays often incur additional expense accounts. The advantage of direct labor is tersely expressed by Mr. Foster, Superintendent of South Parks, as follows: "We accomplish exactly what we aim to do, and do it at the actual cost."

THE CIVIL SERVICE OF THE SOUTH PARKS

The results of direct labor can be realized only when civil service is employed. Under the spoils system the result would be worse than failure. It is important, therefore, to say that no man obtains his position, or loses it, through political influence. Fortunately the political boodler has kept his hands off the Chicago parks. "Every foreman in this system," says Mr. Foster, "has come up from the ranks. No man is appointed for any other reason than his fitness for the duty required of him, and he holds that position as long as he is able to perform it. When by age or disease he is incapacitated, if he has been a faithful employee, he is given a lighter task, such as sweeping the streets. When he is no longer able to perform these lighter duties, and when he has passed all usefulness, it then becomes my painful duty to dismiss him."

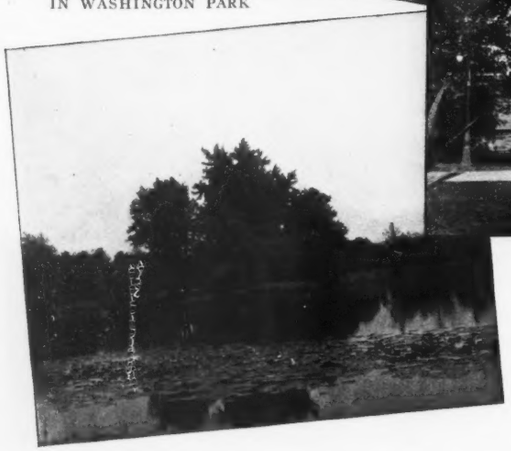
ROOM FOR ALL SORTS OF GAMES

Washington Park has become the resort of Chicago baseball enthusiasts, the circular meadow of a hundred acres or more furnishing ample room. On a holiday it is not unusual to see a dozen games in progress at the same time. The tennis grounds are large and well maintained. In the autumn come the football players from the various high schools of the city and the field becomes one immense playground. The lagoons in summer maintain in constant service several hundred boats. In the time to come, boating in Jackson Park will be the feature of greatest value, not only because of its many large lagoons, but also for its provision for sailboats in South Haven. In winter these same bodies of water give equal pleasure to those fond of skating. In Jackson Park are also found the golf links, and these are now securing many devotees. Among the proposed features of this

IN WASHINGTON PARK

DESIGNS—WASHINGTON PARK

A REFECTORY—DOUGLAS PARK



LILY PONDS—WASHINGTON PARK

A MAIN TRAVELED WAY—JACKSON PARK

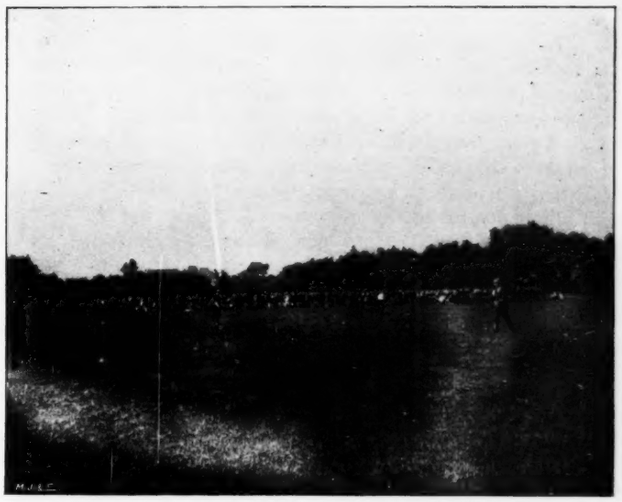
park are two gymnasiums; one for men, the other for women. They are to occupy large open areas and will afford facilities for all kinds of athletic exercises and games.

MANY DIVERSIONS FOR THE CHILDREN

Washington Park has recently added to its attractions a small playground for children. A shallow pool of water is provided and this is surrounded by a sand pit—a combination giving endless delight to the little ones. This is made more attractive by its setting, which is near an old-fashioned house in the midst of a fine group of trees. This bit of playground is the nearest approach to real country and real nature found anywhere in Chicago. Likewise, at many points in the parks, the water's edge is left free so that the children may play in the shallow water, feed the minnows, and do a score of things suggested by childish inventiveness. Picnic groups come by the score and visitors by the thousands, transportation thither being quick and convenient from the distant parts of the city.

BAND CONCERTS PROVIDED

The only entertainments provided at Washington and Jackson Parks are of a musical nature, but to these a good deal of importance is attached. Each season a series of fifteen or twenty concerts is arranged for. The bandmaster was instructed to present as many selections as possible from the best operas, and to introduce "rag-time" music only when it seemed absolutely necessary. The best music is most appreciated. The visitors at these semi-weekly concerts could not fail to notice the civility of the people. Aside from the noise that is naturally occasioned by boys, the order would be creditable even for an opera house. The attendance is very good, ranging from 10,000 to 15,000 people.



A BASEBALL SCENE—WASHINGTON PARK

THE MUNICIPAL SITUATION IN MONTREAL

Extravagant Expenditures for Public Improvements Result in Civic Uprising—Reformation of Council—Enormous Interest Charges—"The Gang" Profits by Bond Sales, But Is Finally Turned Out—The City Robbed of Valuable Franchises

By Herbert B. Ames*

THE municipal situation in Montreal, while as yet by no means all that could be desired, when compared with what it was a few years since, shows marked improvement. Although well merited criticism has still its place, the citizens as a whole are of opinion that the control of the present city government is in honest and fairly competent hands. Owing, however, to financial limitations, and to the obstruction of a small but bitterly hostile opposition, the work of reconstruction proceeds but slowly, and it will require years of careful and economical management before affairs can be once again placed upon a satisfactory basis.

It is necessary, in summing up the present situation, to hastily glance over the municipal history of the past fifteen years. Within that period Montreal has passed through various vicissitudes of good and bad city government, the latter experience predominating.

GROWTH OF THE FUNDED DEBT

The figures showing the growth of the funded debt are perhaps the best indices of the causes and conditions attendant upon the different eras.

Prior to 1887, during a period of ten years, the debt of the city remained stationary at about ten millions of dollars. This obligation had been incurred in the execution of certain necessary public works, such as a water and drainage system, in the purchase of land for public parks and the like. There were substantial assets to show for the expenditure. The municipal government of those days, honest and frugal, erred if anything on the side of ultra-conservatism and perhaps might be reasonably accused of not being sufficiently progressive.

With the year 1888, however, a new spirit came over the administration. New men came to the front, the former leaders were replaced and the doctrine of large loans and heavy expenditure for improving and embellishing the city became popular. But, as is often the case, in avoiding ultra-conservatism, the Council fell into the worse mistake of extravagance.

Between 1888 and 1895 the civic debt was more than doubled. It advanced from $11,270,101 to $25,046,341. In the year 1893 alone no less than $3,317,996 was added. The Council launched into countless projects for street widening and paving. Within seven years $11,500,000 was expended upon these two items. A limit of 15 per cent. on the assessed valuation had been established in 1889 as the maximum of safety for the funded debt, but by 1894 this was exceeded and further borrowing powers sought from the Legislature. When in 1888 the debt represented 12½ per cent. on the assessed valuation, in 1895 this proportion had reached 18½ per cent., and it was not until 1898 that the onward rush was finally checked, and with a debt of $27,000,000 Montreal sat down to count the cost of her extravagance.

So rapidly had the debt been rolled up, that the annual increase in interest charges swallowed up the natural augmentation of civic revenue. Thus, though the city increased rapidly in area and population, the amount available for the regular administrative services remained almost stationary. In 1888 it required about $500,000 to pay the interest on the debt. This was about one-third of the civic receipts, but in 1896 it required $1,000,000 to meet this charge, or over two-fifths of the entire amount raised from municipal sources of revenue.

EXTRAVAGANCE SHUT OFF IMPROVEMENTS

The result has been that since 1896 there have been no great improvements. In fact, the city government has been forced to practice the strictest economy to make both ends meet. The various municipal services have suffered in consequence. The streets have not been properly cleansed, the police and fire departments have of necessity remained undermanned and but imperfectly equipped, and the municipal buildings are in many instances in need of repair. We are poor, we are not clean, we are paying penance for our misdeeds; but, like the devil when sick, we have grown honest. We are now making plenty of good resolves, that, when times of plenty return, we will spend more wisely. These good times are within measurable distance, provided the good resolutions hold out.

But the change for the better in the civic administration is by no means entirely due to that stern schoolmaster, poverty. There has been an active and fairly successful campaign waged for good government of which it is perhaps not inopportune to speak.

In 1892, when the carnival of extravagance was at its height, when it was currently believed and never contradicted that scarcely one-third of the members of the City Council were trustworthy men, an

* Montreal, Canada. Read before the recent meeting of the National Municipal League at Rochester, N. Y., by the author.

organization sprung up among our young men known as the Volunteer Electoral League. Its members had had enough election experience to know that the place to fight the battle for good government was at the ballot box, so the dominating idea was to create an election machine, just as active, as accurate and as effective as that which the ward politicians could bring into the field.

OBJECTS OF VOLUNTEER ELECTORAL LEAGUE

The objects of the league above mentioned as set forth in the constitution were these:

1. To revise and perfect the voters' lists;
2. To encourage the nomination of honest and capable men;
3. To secure the election of the same by honorable means;
4. To prevent and to impartially punish any person violating the sanctity of the ballot box;
5. To introduce legislation to improve the election laws.

This association was purely non-political and expressly declared that it was not a nominating body, but a volunteer electoral machine. One of the methods most effectively employed in preventing fraudulent voting was the descriptive card, where every elector, on entering the poll, found himself confronted with a watcher, able to identify him from an accurate written description. By this method "personation" was stamped out in our civic elections.

GOOD GOVERNMENT CLUB LENDS A HAND

Allied with the Volunteer Electoral League, and working on parallel lines, was a second organization, equally useful, the Good Government Club. This latter body was made up from among the older and more solid men of the community. Upon their shoulders fell the task of selecting and bringing forward suitable candidates and of furnishing the sinews of war. This organization also was purely non-partisan.

Candidates elected by purely volunteer service, at no expense to themselves, bound by no promises which they could not conscientiously fulfill, knowing that the same force which elected them would be pitilessly turned against them on a future occasion if they did not do their duty, entered municipal politics under the best auspices and rarely disappointed their supporters. So it was in our case. The association of older men doing the selecting, the younger men the electing—aided by the English press of the city—inaugurated in Montreal an active campaign in February of 1893, which from the first gained victories. In 1894 the strength of the reform organization had sufficiently grown to enable the friends of good government to capture four wards. These have since never failed to return desirable men. With the election of 1896 the sphere of influence was further widened, so much so, in fact, that the western, or English-speaking section of the city, was purged of all who had misrepresented their constituents. Up to this point, however, our French-speaking districts had failed to respond to the reform sentiment. But, now, the war was carried into "Africa." The French-Canadians needed only to be aroused to do their duty, and the occasion soon presented itself. With the election of 1898 there entered into the Council a strong body of men, representative of all classes, pledged to good government and quite competent to fight for the securing of it. It was found on the first test vote that the old regime could still command a majority of four votes, enough to control nominations, but no longer enough to stolidly defy opposition. The minority from the very first put up a strong fight for better things, and, with public opinion behind them, soon forced the hand of their opponents. Between 1898 and 1900 there was no lack of light let in upon the past and present history of every Council transaction.

AN INVESTIGATION WAS INSTITUTED

A trustworthy committee of Council was named to carefully examine the financial affairs of the city. It was soon found that the previous administration had left upward of $150,000 of unpaid accounts. Every one of these was fearlessly investigated. All the circumstances attendant upon each contract, order or commission were fully enquired into. The committee fixed the blame, and most of the officials implicated have since passed out of the corporation employ. Furthermore, stringent measures were enacted rendering a recurrence of such irregularities impossible.

Again, on the same impulsion, the Council caused to be prepared and passed a new city charter. Many were the clauses therein, born of past abuses, which provided safeguards and limitations both necessary and desirable. A redistribution of wards gave justice to large areas previously inadequately represented. Election frauds were carefully guarded against. The existing debt was consolidated and its future increase safeguarded by provisions at once both restrictive and yet not altogether inelastic. A method of referendum was provided whereby important projects might be first submitted to the taxpayers and the principle of "Home Rule" preserved.

This charter, afterward ratified, though not without considerable mutilation, by the provincial legislature, has now been tested for nearly three years. It is not without imperfections, but it is nevertheless a great improvement on its predecessor. Montreal suffers severely periodically at the hands of the Quebec Legislature, made up of country members more easily induced to support private than public interests. By the introduction of the home rule idea into the charter, we hope in future to have as little as possible to do with these worthies, preferring to submit our financial questions to our own taxpayers and to be governed by their action in each case.

"THE GANG" PROFIT BY BOND SALES

Under the new charter of 1898-9 authorization was given to the corporation to consolidate its public debt. This led to a transaction which proved the Waterloo of the old regime. In the spring of 1899 the leaders of the dominant party undertook to float a loan of $3,000,000. The reform element declared in favor of open competition for the bonds, the same to be publicly advertised and the best offer accepted. Not so the men in command. They preferred to receive only private bids from a favored few. The result was that the local bidders formed a combine. The three tenders received were all at practically the same figure, a trifle above par. Within a fortnight the loan had been resold at a profit to the purchasers variously estimated at from $150,000 to $200,000. The whole city press, French and English, arose in condemnation of those who had thus permitted the profit which belonged to the public to accrue to the benefit of favored individuals. The vote of Council on the question became the test of merit, the dividing line between the sheep and the goats, at the next election. As an index of what public opinion can do when aroused, it is interesting to note the result. That Council contained twenty-six members; ten voted against the law and one was absent, perhaps not unavoidably. The ten aldermen who opposed the transaction by their votes in Council were, to a man, re-elected, only one having any opposition. Of the fifteen who voted for the consummation of this deal, seven were defeated at the polls, three found it desirable to retire from the contest, two secured their seats by means which have been openly declared to be fraudulent. There are only five of these gentlemen left in our City Council to-day, and these are without standing and practically without influence. That loan undoubtedly meant financial loss to the city of Montreal, but the results which it brought about are perhaps worth the cost.

A VICTORY IN 1900

The election of 1900 brought in a new administration. Out of thirty-four members twenty-two were distinctly pledged to municipal reform, and with one or two exceptions these have remained true to their pre-election promises. The so-called reform administration has been in control of the municipal government for the past fifteen months. No very radical changes have taken place. No new schemes for vast improvements have been put into operation. It is impossible, in fifteen months, to reverse a machine which has been running rapidly down hill for fifteen years. But the brakes have been successfully applied. The downward career has been checked. The movement upward has commenced. Progress, to be sure, is slow, yet it is steady. Owing to the financial position of the city, previously explained, the various services are still of necessity being operated with painful economy, but the impartial collection of the revenue and the open competition for municipal privileges is yielding increased income. Next year a 10 per cent. increase in the amount available for current needs is expected and a 20 per cent. increase is probable for the year following.

Prior to the advent of the present Council it had been openly alleged that civic promotions and appointments were a matter of barter and sale. The charge was publicly made that a "toll gate" existed, through which all candidates must pass, and this charge was never satisfactorily refuted. In the fall of 1899 the reform minority in Council endeavored to secure an investigation into the workings

of the Police Department. A measure to this effect was, indeed, finally carried through the Council and the Police Committee instructed to hold an investigation. But on the day when the first witnesses were to be examined, each member of the Investigation Committee was served with a writ of prohibition, an injunction having been granted by the court. The investigation was then delayed, by legal quibblings, until after the elections, but by that time nearly all the aldermen who were supposed to fear exposure had disappeared from public life. I can say with confidence that the systematic purchase of positions no longer exists in Montreal. In the Police Department to-day promotions are made on merit. A system of civil service examination has been introduced, and no man can be named constable until he has passed a satisfactory examination. Aldermanic pull in this department has entirely disappeared. The Chief of Police, who was regarded as being too much in sympathy with previous methods, and whose reputation had suffered in a libel suit against a local newspaper, saw fit to resign, and is about to be replaced by a man of energy and ability. A number of civic officials, occupying prominent positions, whom investigations proved to have systematically defrauded the corporation for years, have been dismissed and in some cases legal proceedings have been taken to punish them.

In the awarding of municipal contracts the lowest responsible tenderer has received the work in every instance since the advent of the new Council.

THE DISPOSITION OF FRANCHISES

Unfortunately for Montreal, the franchises have been either given away by the Legislature or disposed of by the Council for far less than their value.

In 1892 the Street Railway Company secured a thirty-year franchise. It pays to the city about $80,000 annually and gives low fares, but the fact that its stock is quoted at 283 for a $100 share is sufficient proof that the city has not received full value for the franchise.

In 1895 the Gas Company secured a fifteen-year franchise and the right to charge citizens $1.20 per 1,000 cubic feet for gas. For this the city receives practically nothing. Here again the stock is being sold at two and half times its par value.

In 1892 the Council granted a renewal of the electric street lighting contract for ten years at a high figure, after refusing to consider lower offers made by other responsible parties. Now, however, the present Council is calling for bids, upon its own specifications, in ample time to permit of competition, and it is confidently expected that a reduction of at least 25 per cent. in the cost of electric street lighting will result. Should this expectation fail of realization, a municipal electric lighting system is not an impossible alternative.

The campaign of the future in Montreal will probably be fought out on the lines of Home Rule. We now dread the Legislature more than we dread our own people. Under our present charter, all questions involving large expenditure may be submitted directly to those who will be called upon to bear the added burden necessarily involved. It is the intention of the present administration, if continued in office, to lay before the taxpayers certain well-defined schemes for public improvements. If these projects are ratified, Montreal will continue to advance as a well equipped and well adorned city.

From this brief exposé of the municipal situation in Montreal, it will be seen that municipal reform has made great advances during the past few years. It seems hardly possible to believe that matters will ever again be allowed to relapse into their former condition. We have certain peculiar problems and difficulties, owing to our dual language, and distinct nationalities, but we have as yet avoided politics in municipal affairs, and trust we may continue to do so. A sober, hard-working, law-abiding people inhabit the northern metropolis, and though we may perhaps make haste slowly, the temper of our people is conservative, and once having won honest municipal government, we are not likely soon to let it slip from us.

WOMAN'S WORK IN THE WORLD'S CITIES

Scores of Improvement Associations in Every State in the Union—Civic Adornment in Thousands of Municipalities—Great Achievements in Europe

By Mrs. Frances Copley Seavey*

We find that while much has been done in this country, improvement work is relatively in its infancy in these United States.

We have reports from about 150 improvement organizations, including several foreign societies.

ORGANIZATIONS IN TWENTY-TWO STATES

Twenty-two States, from Maine to California and from Minnesota to the Gulf, are represented, Massachusetts being the banner State, with a showing of forty-five, and Pennsylvania second on our list in point of numbers heard from. Nearly all of the organizations sending in reports in answer to our inquiries have taken active interest in tree planting, some on a very large scale. Many have done good and much needed work in the improvement of schoolhouse and railway station grounds, building and repairing sidewalks, establishing and maintaining street lights, street sprinkling and street cleaning. Quite a number have abolished weeds, some have corrected the bill posting nuisance, and a few have succeeded in passing and enforcing ordinances against spitting in public places; and one has put a stop to the dangerous habit of throwing broken glass about. In the East good work has been done in fighting destructive insects, and in placing memorial tablets to mark historic spots. The clubs at Clinton, Me.; Lake Charles, La., and Stephenville, Tex., are active and deserve encouragement. Parks have been established through the efforts of the association of Bennington, Vt.; Petaluma, Cal.; Athens and Huntingdon and Honesdale, Pa.; Helena, Mont.; Black River Falls, Wis., and Fairhaven, Mass., which last has, in addition, distinguished itself by building a drinking fountain and 100 bath houses. But the societies that have reported are as a drop in the bucket in relation to the actual number in existence. There is no way to even approximately estimate the number in this country. They are being formed faster than they can be counted; there is a moving beauty wave, the ripples of which reach from shore to shore.

MUCH TO BE LEARNED FROM CANADA

Still we have much to learn from foreign work and workers. The leading features of improvement work abroad that might most effectively be applied here are, first, a more diffused knowledge of the material value of beauty—a matter so well understood over the water that business men are the staunchest supporters of beautifying movements; and, second, a greater appreciation of water, especially in streams, which in foreign countries is held in higher esteem and where fuller advantage is taken of its proximity.

We learn from reports received that in Canada there are so-called horticultural societies which have practically the same aims as our improvement associations, and which are doing good work, that it is hoped and expected will be greatly increased and strengthened, and that the Countess of Minto is taking active steps to promote this work in Ottawa by offering a series of prizes for the best garden where a gardener is kept, and a duplicate series where no gardener is employed.

In Norway there is an annually appointed "Plantation Day," when the children take part in exercises corresponding closely to those of our Arbor Day. An Improvement Society has been formed in Christiania, with the Mayor and leading architects as its founders, but our report says that "as yet no results of their work are seen."

THE WORK IN EUROPEAN CITIES

The people of Orsa, Sweden, practice scientific forestry to such good purpose that they have in the course of a generation sold

* Chairman of the committee on local improvements, who read the report before the recent session of the American Park and Outdoor Art Association, at Milwaukee.

$4,600,000 worth of trees and have provided for a similar income every thirty or forty years. This money is used for municipal purposes and the people pay no taxes. Railways, telephones and schools are entirely free. Gas and water rates are met by this fund, as are also the cost of building city halls, courthouses, and similar expenses provided for in almost all countries by taxation.

Good work has been done in France and Belgium.

Our Singalese report tells of prizes offered by officials in the Government railways of Ceylon for the best kept station grounds, and of prizes given by the director of public instruction for schoolhouse grounds.

In Austria, improvement societies are found only in small places, chiefly at summer resorts and watering places. In England and in Germany, the countries that lead in improvement work, the pollution of streams is not permitted, neither are their banks defaced. Miss Mira Lloyd Dock, of Harrisburg, Pa., to whom we are under deep obligations for information and inspiration in preparing our report, says that "Investigators in Germany find the country is practically one vast improvement association; that the chief features of German river towns are the avenues of trees along river banks, and the floating baths anchored off shore." She tells of the great Schwarzwald Verein, or Black Forest Improvement Association, composed of business men who have learned that beauty and scientific forestry, and good roads, bring dividends in dollars and cents. The aim of the society is to "extend knowledge of the Black Forest, facilitate travel through it, attract visitors and make the natural beauties of the region accessible." Throughout this region all of the land is either in farm or forest, as the state cannot afford unproductive areas, and there are village communes receiving incomes from forests which not only meet all taxes corresponding to our road, county and school taxes, but which pay annual dividends to householders. Apropos of this foreign work, Miss Dock says, "It is not necessary to go to England or to Germany to realize the financial value of well ordered communities, for the States of New Hampshire and Massachusetts together receive about six million dollars a year from summer visitors, because they have fine roads, and clean, well-managed villages where visitors are able to enjoy the beautiful scenery."

The States of Michigan, Minnesota and Wisconsin have the same incentives and the same opportunities as the Eastern States named and should make the most of them.

ENGLISH IMPROVEMENT ASSOCIATIONS

The Metropolitan Public Gardens Association of London is the greatest improvement association in the world. It has been in existence eighteen years, and during that time has successfully completed 430 distinct undertakings of varied character, but "all," as Miss Dock has said, "intended to contribute to health and happiness." They range from placing a seat beneath a sheltering tree to improving Epping Forest at an expense of £277,000.

It has opened more than 200 schoolhouse grounds on Saturdays; has transformed not less than 120 neglected, dreary and unsightly disused burial grounds into play grounds and public gardens; and the mere schedule of its own work would fill a volume, while its powerful influence has also been brought to bear in forwarding the work of other organizations.

There is the Railway Banks Floral Association, established by Lord Gray, which devotes itself to the planting of railway cuttings and embankments—a novel and admirable field of improvement work; the Kyrlie Society of London, with branches in a number of the smaller cities, its motto "To the utmost of our power," and its object to "bring beauty home to the people"; and several kindred societies such as the Commons Preservation Society, the National Trust for Places of Historic Interest or Natural Beauty, the National Footpath Preservation Society and numerous affiliated organizations, all of which have the creation or the preservation of open spaces of rest or recreation as their fundamental reason for being.

Perhaps the Improvement Association of Leamington, England, has done work that comes nearer paralleling the work needed in American towns than any other foreign organization heard from.

RESULTS IN AMERICAN CITIES

Turning again to our own country, two States at the extreme East and West, Massachusetts and California, may be mentioned as examples of the intrinsic value of beauty, and in both the spirit of development typified by improvement work is more or less active, Massachusetts, as has been said, leading the van. This spirit is in the air. One must absorb more or less of it in walking down the street. But we observe that not all that is being done is being well done. There is room for improvement even in the improvements. There is a little lack of comprehension as to the necessity for design in landscape work, and a slight falling short of a full appreciation of the larger possibilities of improvement work. Still, much that is wholly admirable is being done, and we feel that anything done is far in advance of nothing done. We do not wish to be critical, but merely to call attention to the fact that while the younger organizations may content themselves with the plain everyday needs of their communities, the older societies should look abroad and take counsel with those that have accomplished telling pieces of work that stand out boldly above the ordinary level.

Such work as securing a good stone railway station, instead of the usual commonplace wooden structure, is of lasting benefit to any community. This has been done by the Citizens' Improvement Association of Ward 25, Boston, Mass., and by the Laurel Hill Association of Stockbridge, Mass. The latter is probably the oldest improvement organization in this country, and it has set another standard by its memorial work, having built a monument to the Stockbridge Indians, and a memorial bridge and walk for its founder and its first president. Such features add to the interest and attractiveness of a town and have a material value appreciated by business men. The sanitary and other noteworthy work of the Town Improvement Association of Montclair, N. J., can only be fully appreciated by reading of it in full in its printed reports. The Beverly, Mass., society has secured two new railway stations and done much more that is commendable. The Civic Club of Harrisburg, Pa., has reformed the street cleaning, secured ordinances forbidding dumping, maintains play grounds and done much more practical work. The societies of Aiken, S. C., and of Rutherford, N. J., have secured parks for their respective cities; that of Amesbury, Mass., has changed an unsightly spot into "Highland Square" as well as suitably marked numerous places of historic interest. The association of Honesdale, Pa., has for its motto: "Let us all work together," and has done work similar to that at Leamington, England.

WHAT TO DO NEXT

To sum up: Your committee suggests (1) that improvement societies are the already existing nuclei from which great transformation should result: (2) that improvement work should be submitted to business men as a business proposition; (3) that the hygienic disposition of household waste is a paramount question that should be considered by every improvement organization; (4) that bad conditions in cities are the logical outgrowth of bad conditions in towns, villages and in the country, and that these should be traced to their sources and preventive and remedial measures instituted all along the line; (5) that interested assistance is likely to follow definite statements of bad conditions if accompanied by a clear outline of practical means for overcoming them; (6) that twentieth century intelligence, admitting that the whole is greater than its parts, plans in a large way before executing details; (7) that large aims and earnest work bring their own reward, and lastly (8) that if one person present absorbs the notion that it would be vastly fine to line every approach to the home town with red bud and wild crab and wahoo and invite the birds and the squirrels to live in them, and —goes home and does it, your committee will feel that "it has done what it could."

STEEL AND CONCRETE IN MUNICIPAL CONSTRUCTION

First Used in Europe Twenty-one Years Ago—Cement Acts as a Preservative—Successful Use in America—Widens Sphere of Usefulness—Description of Test in Boonton—In Great Demand for Fire-Proofing

By Merrill Watson*

THE accomplishments in the use of steel and concrete in building construction are limited to the past few years, so far as this country is concerned. Moreover, it is a subject whose years of practice anywhere in the world only measure a single score. To be exact, the first mention of the use of steel as a practical thing in connection with concrete construction was just twenty-one years ago. Therefore, the subject, so far as discussion is concerned, is limited to a mere record of current history.

IN ITS INFANCY FIRST USED IN EUROPE

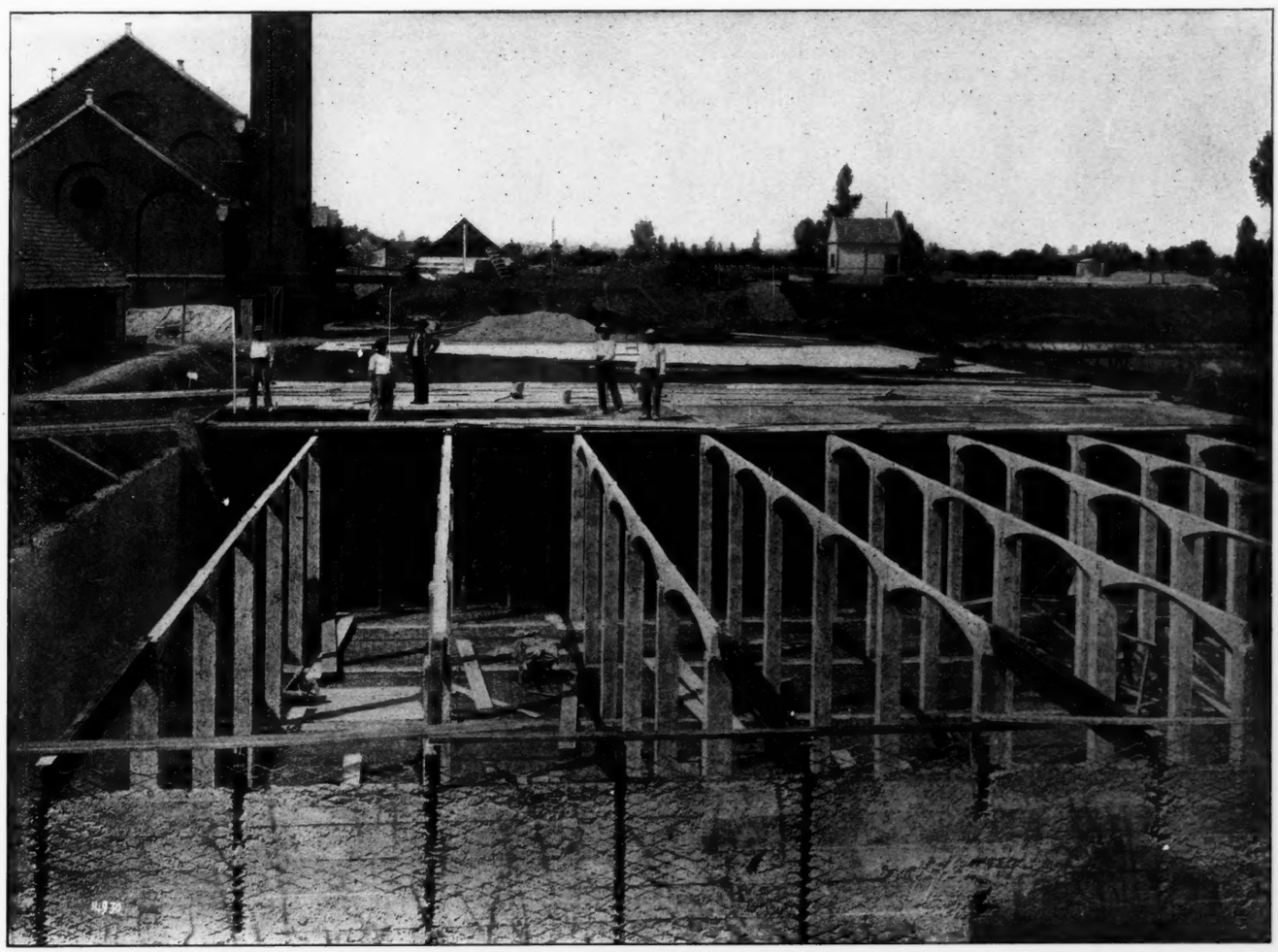
The scheme of construction is not sufficiently developed to be called an exact science. I question whether any engineer can be found in this country who would be responsible for any set formulæ or general specification whose results he could guarantee within 25 per cent. of a given point of value. While it is true that abundant efficiency has been demonstrated by numerous tests that have been made, there have not yet been sufficient of them, nor have they been wide enough in range, to determine any fixed laws. What I have to say, therefore, is largely a matter of record of what has been done in the way of developing an industry, whose future at the present time seems to be very bright.

The first practical test of the use of steel in combination with concrete for structural purposes was made in Europe, in 1880, by Monier. The efficiency of concrete itself was known, and had been for centuries. The high price of cement and the large quantity necessary to be used made it a rather expensive scheme of construction, except in places where it was used in compression only; hence, the introduction of metal was looked upon as a means to an end along economical lines. The introduction of steel into concrete was with a view of putting a tensile element into a valuable material, otherwise lacking tensile strength. During the past decade there have been made many combinations of steel and concrete, in some of which the steel was intended to act entirely in tension, in which case it was distributed through an area of minimum tension of the section in question, and others in which the steel acted under transverse stress. Both of these methods possessed certain advantages. It is an acknowledged fact to-day, however, that the best practice along the lines of steel in combination with concrete is in tension only.

CEMENT PRESERVES THE METAL

Just here it may be mentioned that it was demonstrated early in the development of the subject that cement acts as a preservative of the steel; and many instances can be cited showing that when thoroughly imbedded in concrete rust will not occur, even though the concrete itself be immersed in water. The establishment of this claim very materially widens the field for the use of the combination. In addition to the tension value supplied to a mass of con-

* Home Life Building, New York City. Mr. Watson read this paper before the fifth annual meeting of the League of American Municipalities, held at Jamestown, N. Y., August 21-24, 1901.



USED IN CONSTRUCTION OF WATER RESERVOIR IN ANTWERP, BELGIUM.

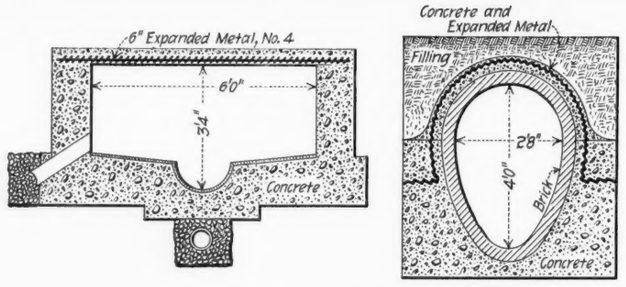
WATER CONDUIT AT BOONTON, N. J

crete by the introduction of a given quantity of steel, the steel is, in reality, greatly stiffened by the concrete itself, and thus its very maximum of strength is brought into requisition. This opens the question as to the best form or best employment of a given amount of steel either in pounds or square inch section for any given requirement. There is absolutely no data on the subject by which comparison of the various forms in common use can be made, and hence engineers have only to rely upon their judgment as to the desirability and economy of the various materials offered on the market.

As indicated previously, the Monier system was first introduced in Europe in the year 1880. This system accomplished all that has been accomplished by other later systems, so far as direct result is concerned. The metal which he used was in the form of round iron rods, made into a netting, the several rods being tied together at their intersections. The openings were from two inches to four inches, according to requirements. In succeeding years, others followed this type of construction, some by using metal in structural shapes of various forms and still others by the use of square rods twisted in spiral form. To-day almost every conceivable form of iron and steel is used for the re-enforcement of concrete. One prominent system of floor construction uses rolled iron in the shape of a double cross. In another system the material is cut from a sheet of high grade steel and opened into a netting of diamond meshes of any desirable size of mesh or section of strand. In general practice these meshes are from three-eighths inch to six inches in their largest dimension and the steel used is cut from No. 4 to No. 27 gauge. The sheets are eight feet long and vary according to requirement from eighteen inches to six feet in width.

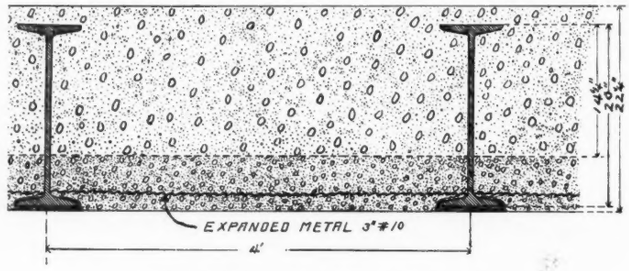
WIDENS SPHERE OF USEFULNESS

This material enables the easy accomplishment of a purpose mentioned heretofore, namely, to use the steel on the tension side of a mass of concrete when serving as beam or floor slab. In the development of the business to its present point there was little to guide either the engineer or the manufacturer of this unique material. It was groping in the dark from step to step along the entire line of



ADAPTATION TO SEWER WORK

developing this science, covering a period of a half dozen years or more. The first step taken wherein the use of this material was accomplished was naturally in the building of nreproof floors. At first it was thought quite an accomplishment to build a slab floor upon a system of iron framing over spans averaging five feet, the slab being three and one-half inches in thickness. When more venturesome contractors proposed to use eight-foot spans with the same thickness of slab it was considered dangerous, and thus the work went on until to-day, when it has become common practice to build floors of metal and concrete on spans sixteen feet, eighteen feet and twenty feet in either direction, and, in some cases, with a very small quantity

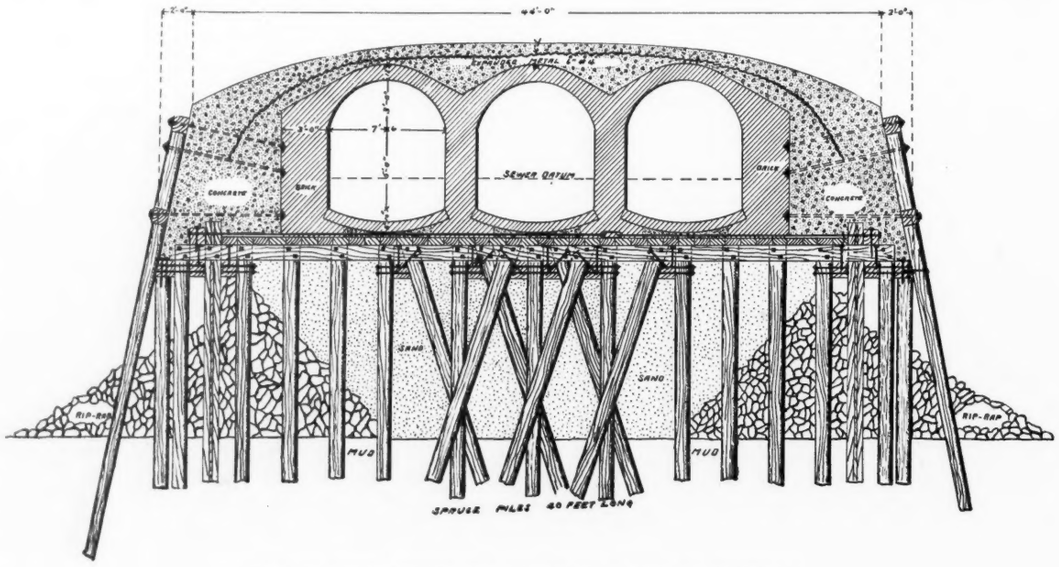


USED FOR ROOFING SEWER IN BUFFALO

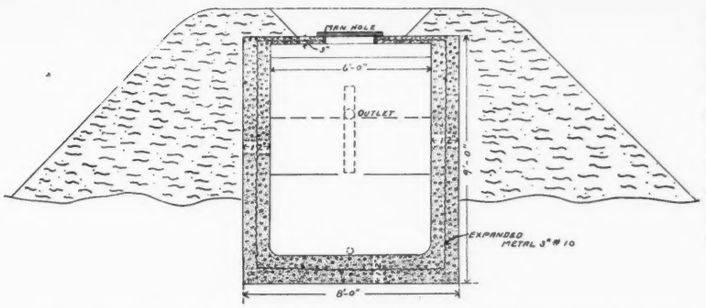
of iron work, aside from the columns which sustain the load. The details of these accomplishments in floor construction I will not stop to enlarge upon. The purpose of my paper is to show some of the accomplishments in other lines, namely, the use of this material in the erection of piers, sewers, bridges, subways, reservoirs, tunnels, conduits, septic tanks, manhole covers, and other classes of work coming under the heading indicated by the subject of this paper.

SUPERSEDING COMMON MASONRY

It may not be amiss to say just here that concrete is having a battle, which it is successfully winning, against all the common types



FORM OF CONSTRUCTION FOR TRIPLICATE SEWER IN BROOKLYN

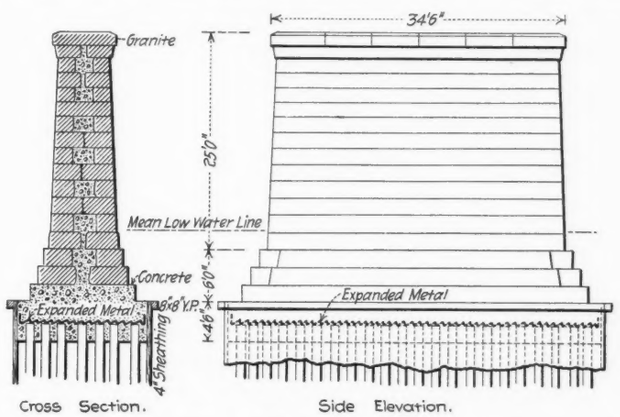


WALL ADAPTED TO SEPTIC TANK CONSTRUCTION—CROSS SECTION OF ONE BUILT AT TANNERSVILLE, N. Y.

of masonry for a multitude of uses. The recent development of the cement industry and the greatly diminished cost of this material has enabled the engineer to demonstrate that where ornamentation or structural effect is not required, he can accomplish 90 per cent. of his work formerly done either in brick or stone by the use of properly proportioned concrete mixtures. The question naturally arises, what measure or degree of economy could be accomplished by the use of steel in concrete? It is a question for which no single answer will suffice. Based upon my observations, I should say that the range of economy is from 20 to probably as high as 80 per cent. of concrete, according to conditions.

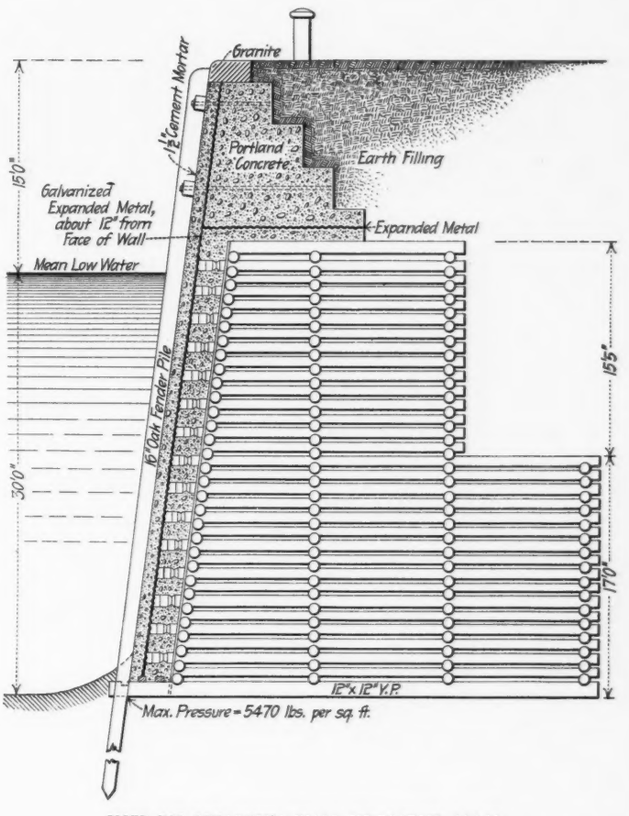
PRACTICAL TEST AT BOONTON

In a practical way, the nearest accomplishment to a real test of the value of steel in concrete of anything other than flat or blanket form, was a recent demonstration at Boonton, N. J. Mr. E. W. Harrison, Chief Engineer of the Jersey City Water Supply Company, based upon known formulæ for the strength of concrete alone, had designed a section for a water conduit. The conduit was an elliptic arch,



USED TO RE-ENFORCE PIER HEAD IN PHILADELPHIA

eight feet six inches in diameter. To build this arch, as designed, it required two cubic yards of concrete per lineal foot of pipe section. A section ten feet in length of the same weight carrying capacity, and practically the same shape, was constructed of re-enforced concrete, which section consumed just a trifle over one cubic yard per foot of pipe section. The re-enforcement was Expanded Metal of three-inch No. 10 gauge. When tested in a thoroughly scientific manner, it was found to have double the estimated value of the concrete section as originally designed. Assuming the concrete to be worth $7 per yard, there was that amount saved less a cost of about $1 for the steel used. The suggestions arising from this test are, of course, numerous, and have wide application in possibilities. There is, however, no particular data obtainable from it that will have any value in the solution of any similar problem, so that the designing engineer must, after all, rely largely upon common sense and temporary experiments for each particular job of unusual requirement, rather than special mathematical formulæ.



USED FOR RETAINING WALL IN BOSTON, MASS.

In fact this material has been put to use in almost every class of work for which it might be called in municipal construction. The first large general use of it was in the city of Chicago, some years ago, when it was used to re-enforce a concrete bed underlying asphalt pavement. In that city the subsoil is practically a sand bed over which there was usually laid a heavy bed of concrete, upon which was placed the asphalt. By this it was demonstrated that the bed of concrete could be lessened in thickness very materially by the use of expanded metal as a re-enforcement and this was done to the extent of many miles of street. There was economy in the amount of concrete, as well as the lesser amount of excavation to be done.

In this connection it might be mentioned that inventive genius is now at work with a view to using the material in the direction of economy in the amount of asphalt itself.

MUNICIPAL RESTRICTION OF VICE

The Trinity of Vice—The Jersey Way of Regulating the Saloon—When and Where Gambling May Be Permitted—Methods for Restricting the Brothel

By Norman Fox, D. D*

THERE are three institutions that demand municipal watchfulness,—the drinking house, the gambling house and the house of ill fame. Let us consider each.

There are comparatively few who demand that the drinking house be entirely suppressed. As a clergyman and an advocate of temperance I advise men not to drink, but I fail to see on what ground I can call on the law to forbid all drinking. When the "gentleman of the old school" tells me that he finds a little whiskey not only harmless but absolutely beneficial, I may dissent from his view; but if he prefers to act on his opinion rather than mine, I do not see but I must accord him that liberty. But his right to drink carries with it a right to buy, which covers some man's right to sell. And even when a man is drinking so much that his eye is bloodshot and watery, when there is no denying that he does himself an injury, if he never becomes really intoxicated, never becomes noisy and dangerous, never is guilty of breach of the peace, I do not see how the law can interfere. The case is indeed a sad one, but there are many bad cases in which the law can do nothing. We all know of more than one man who smokes two dozen strong cigars a day, breaking down his nervous system, destroying his health, hurrying himself into the grave, but you cannot demand that no one be allowed to sell him tobacco. This is a free country and that means that a man is free to do foolish, even fatally foolish things, free to squander his money and reduce himself to beggary, free to disorder his stomach with gluttony, free to commit suicide if he will do it gradually and quietly. But if a man is allowed to kill himself with tobacco or strong coffee I do not see but he must be permitted to drink to his great injury, provided he is never guilty of breach of the public peace.

REASONABLE SALOON RESTRICTIONS

But all will allow that the sale of liquor may be suppressed so far as it involves public disturbance. If a man's drink makes him violent and a menace to others, if it makes him torpid so that he sinks down on the pavement in a dead sleep, becoming a disgusting nuisance, the sale of liquor to him should be forbidden. As we may prohibit the sale of tobacco to children, so we may forbid the vending of liquors to minors. The law of New Jersey condemns the sale of liquor to one who is already visibly under the influence of alcoholic drink, and also to one who is "known in the neighborhood to be of confirmed intemperate habits,"—in other words, the dealer cannot plead that he did not know that the man was in the habit of getting drunk or that no one had notified him, for if the neighborhood knows of it he should know. Again, license to sell may properly be refused in a place where congregate railroad hands and others in whose case drunkenness would be especially dangerous. The sale of liquor like the sale of gunpowder or poisons involves certain dangers, and therefore while the business may not be entirely forbidden it should be put under all restrictions necessary to safeguard the public.

Nor should noise be allowed in or around a drinking place. A saloon ought to be no more of a nuisance to its neighbors than a restaurant or a cigar store. The saloon keeper who cannot keep his place just as quiet as a newspaper stand or barber shop has no right to continue in the business.

EXPERIENCE OF MORRISTOWN

My program of temperance effort is this—so far as the use and sale of liquor, like the use and sale of tobacco, involves no public disturbance, deal with it as you do with the use of tobacco, use every possible argument to dissuade men from it, but you cannot properly invoke the arm of the law. So far, however, as the sale of liquor involves disturbance of the peace we should strike it quick and without mercy.

An experience of upwards of two years on our Board of Excise Commissioners convinced me that the control of the liquor traffic is not a difficult thing if it be taken hold of with proper firmness. When a man was applying for a license I used to say to him,—I advise against the use of liquor, but men are not obliged to take my advice. And now will you meet me half way? If I will vote for your license will you agree not to sell to any minor nor to any man already under the influence of liquor, nor to any man in the habit of getting drunk, nor in forbidden hours? And will you so keep your place that it shall be no more of a nuisance to the neighbors than a cigar store or a newspaper stand? Of course the man would promise, and in many cases sincerely, feeling that I was asking nothing unreasonable; but the worst man saw that I had a rope around his neck and it would not do for him to try any games on me.

Excise commissioners have such wide discretionary powers that they can control the traffic fully. In a large city where applicants for license are too numerous to be known personally, information should be supplied by the police. Let it be fully understood that sales to improper persons or at improper hours will surely involve loss of license and such sales will instantly cease. And when such sales are stopped all is done that the law can do. The discontinuance of other sales, of those which do not involve breach of the peace, can be brought about only by the pulpit, the platform, the press, the schools and the other moral forces of the community.

WHEN AND WHERE GAMBLING MAY BE PERMITTED

As to gambling, it may be said that when a few men meet in a private room and play for small stakes, or even large ones, the law may have no call to interfere. But in the case of a gambling house it is different. Here is an organized institution, a place that is opened not merely for the convenience of players, but for the encouragement of gambling and therefore must be regarded as inciting evil. It is true that the law cannot make men moral, but it can restrain them from schemes to lead others into immorality. In some foreign countries lotteries and gambling houses are maintained by the government, but in nearly, if not quite every one of our own States, gambling establishments are declared illegal, and there is practically no one who complains of their proscription. All, therefore, that need be said on this point is, that the police authorities should enforce against such establishments those laws which every good citizen, except perhaps here and there some perfect crank, will be pleased to see enforced.

A NOVEL SUGGESTION

And now we come to the subject of prostitution. There is a widespread sentiment that houses of ill fame may be allowed to exist provided they confine themselves to certain localities. But what district will you assign to them? There is no part of the town but in it there dwell some who are respectable. There are thoroughly worthy families who, by the necessities of business or by stern poverty, are compelled to reside in the neighborhood in which it is proposed to allow vice to flourish unrestrained. Now by what right can you pour out on their surroundings this flood of physical and moral disease? If these establishments cannot be allowed to exist among the homes of the wealthy, no more should they be tolerated where dwell the poor, who already are sufficiently handicapped in their efforts to bring up their children aright. The first duty of a municipal government is to care for the struggling people of limited means; and, therefore, if houses of vice are to be assigned to a location let it be a Fifth avenue or a Beacon street, where dwell those who are strong enough to defend themselves against the plague.

METHODS OF RESTRICTION

Some writers deal with this subject as if prostitution were a public necessity. It has indeed flourished in all lands. But where it has received a liberal toleration there have always existed in connection with it certain darker vices, unmentionable degradations, and

* Mayor of Morristown, N J., who read this paper before the fifth annual convention of the League of American Municipalities, held at Jamestown, N. Y., August 21-24, 1901.

these on the same grounds might claim tolerance as necessities. But there are thousands and tens of thousands of men of as strong impulses as any who yet have maintained pure lives and any man can keep himself from ordinary immorality as well as he can keep himself from the unmentionable vices by simply maintaining a proper self respect, a due regard for the dignity of human nature.

For the suppression of the brothel let both the offending parties be treated in the same way. When a man and a woman are arrested together he cannot be regarded as any better than she, and should receive no milder treatment. If she is to be arraigned in the police court let him also be fined or sent up. If it were understood that not only were bawdy houses to be raided, but that the men caught in them would be treated in just the same way as the women, men would not risk themselves in the places and they would be closed for lack of custom. When street soliciting and the open house are done away with the total amount of licentiousness will be greatly diminished. This again will lessen the demand for new girls to enter the evil life. Licentiousness cannot be entirely done away with, but when there remains only the kept mistress the municipal problem is reduced to much smaller proportions.

POLITICAL LIBERTY

Liberty Only a Dream Thus Far—Tricky Politicians Plunder the Poor—Partyism Overrides Patriotism—New Party No Remedy—The Only Hope

By Samuel M. Jones*

To only a limited extent have we, in America, achieved political liberty. In the "Religion of Democracy," a remarkable book that came out during the last year, I read that "Europe and America are sick with the nightmare of their dreams. In their dreams they have dreamed of equality, and in their dreams they have achieved liberty, but only in their dreams, not otherwise."

ONLY DREAMED OF LIBERTY

I think I agree with this proposition to the fullest extent. We have dreamed of equality and liberty, just as when, in that semi-conscious state which is described as half sleeping and half waking, we have fancied we possessed the reality, but awaking from our slumbers we find that we have only been dreaming. Because it is written in the "Declaration" that "all men are created equal," it does not necessarily follow that our institutions and laws are built true to that high and holy ideal. It is a grand thing for America that our forefathers "hitched the wagon to a star," but political equality is a star that is yet afar off, and though some of them followed diligently, the nation has not yet discovered the common ground of political equality that will prove its savior. It is not enough that every male citizen shall have the right to vote, for the conferring of the political right to vote before we have discovered how to think is of little value to the cause of human liberty.

Political liberty implies a political state in which every soul must have something more than the mere right to vote. To my mind, it should imply a state of society in which every soul should be a sovereign equal, in which he or she should have access to every needful thing required to develop the highest possibilities of soul and body. This is equality; this is democracy, and some decades, perhaps centuries, hence, America will have realized this exalted state. We are going forward. We are infinitely better than we were; we shall be immeasurably better than we are.

THE TRICKSTER PLUNDERS THE POOR

In our as yet imperfect state of development, government—municipal, state and national—is an instrument largely made use of by the cunning few for the purpose of plundering the poor while pretending to serve them; and the people, through an equally immature and imperfect system of education, through a species of flag worship and delusive talk about patriotism, remain in ignorance of the way they are victimized. In this, as in every relation of life, they pay the penalty of their own ignorance. For, let it be remembered, that for every defect in our system of politics the people are to blame. It is not chargeable to "corrupt organizations," "scheming politicians," "the ruling classes," "the corporations," or any of the various sources against which there is so much outcry. Every imperfection in our government system is subject to revision by the people themselves, whenever the people consciously and intelligently *will* it. In other words, we as municipalities, states and nation are and will be, just what we *will* to be—slaves, or serfs, or free men.

OUR FIRST ONE HUNDRED AND TWENTY-FIVE YEARS

In our politics, thus far, we have willed to be, to a great extent, slaves of the political bosses, because we have adopted a system of party politics that cannot be carried on without bosses and machinery. It is true that a government in the interest of bosses is better than a government in the interest of a nobility; the political boss is more democratic than a king or queen, hence I would prefer to be ruled by a boss. A government by political bosses is a step in the right direction, but it is not final. We have as yet but touched the borders of the great ocean of political truth. I invite you to achieve political liberty. I entreat every man who would be free, who would taste the sweets of liberty, to cast aside his party bonds and plunge boldly into this great sea of human delight—freedom.

PATRIOTISM AND PARTYISM

Patriotism and partyism cannot abide together. Oil and water will not mix. Good and evil are antagonistic. Only as we grow superior to and rise above partyism can we have any adequate conception of the glory of patriotism. Patriotism means the love of the whole; partyism the love of the few. Patriotism seeks the triumph of the whole; partyism the triumph of the few. Patriotism fuses the whole together into one indissoluble mass; partyism seeks to divide and separate.

We profess to believe in a government of majorities; as a matter of fact, our government is a government of a select minority. This will continue while the people are owned by the parties.

THE HOPE OF DEMOCRACY

The hope of liberty and equality lies, then, in larger politics; lies only in the creation of a citizenship of sovereign equals. Then every man will carry his sovereignty under his own hat, and every woman will carry her sovereignty under her own hat, if she wears one, or in front of her Grecian knot, if she wears only that. Under the present system of politics there is no hope of progress, because the conventions are dominated by the bosses as completely as though they owned them—which they often do.

Our government is a government of minorities, because a few men in each political division select the candidates; they get together in the primaries—a handful of men—and "make a slate," naming those who shall go to the convention, and before their names are ever placed on the slate the bosses know whom and what they are for. Thus the candidates are named in advance of the convention. When the candidates are once named, it is all over but the shouting. Thus the whole thing is settled by the few men who name the candidates, and still we go on blindly worshipping this system. Occasionally there is a howl for a new party, but there is no hope in a new party operated with the same old machinery. The same old machine will produce the same old result.

A NEW PARTY IS NOT NEEDED

The party system has not miscarried; it has done just what is was designed to do. It is a system of selection by which the cunning, the strong and unscrupulous are given the mastery of the simple, the confiding and the unwary. To change the name of the party and conduct it with the same machinery can bring no other result. In resorting to the organization of parties in the hope of affecting

* Mayor of Toledo, O. This is a synopsis of an address delivered before the fifth annual meeting of the League of American Municipalities, held at Jamestown, N. Y., August 21-24, 1901.

political reforms we are trifling with a fundamental principle of human life; a principle, indeed, affecting all life, and that principle is the idea of unity. Humanity is an organism. All humanity is one; the nation is one; the municipality is one; the state is one. Now, the organization of parties or sects within a body that is already one, only means the disorganization, the disruption, the destruction of that body, and we can hope for no other result so long as we pursue this policy. It is the hopeless method of strifeful warfare.

Many well-meaning people think they see relief from the political evils that beset us in public ownership of public utilities; others see the remedy in the single tax; others in the forceful inauguration of socialism. I am for the public ownership of every thing in sight. I am for the common ownership of everything that is needed to develop to its highest possibilities each life in the state, the nation and the world; but I think we can all see that public ownership of public utilities in a society of thieves would not produce the ideal social state. The single tax would not prove effective in making men and women honest; and simply voting for socialism would not coerce the people into righteousness. "Righteousness exalteth a nation, but sin is a reproach to any people," said the wise man three thousand years ago, and I fancy no one has yet discovered a substitute for integrity; indeed, I believe Whitman, the poet of democracy, has given us a key for all our political ills in six words, and here they are: "Produce great persons; the rest follows."

It may be there is a short-cut road to political peace and social justice, but, if so, I have not yet discovered it. The prescriptions of Solomon and Whitman may be old fashioned, but they appear to be fashioned in God's way.

THE REMEDY

As I have said, the remedy lies alone in the growth of the love of liberty that shall bring every man and every woman to declare his and her emancipation from any and every sort of sect, or clique, or party that shall in any way hamper or limit him in his right to live at all times according to the highest impulse of the soul.

I am a man without a party. I disavow allegiance to any man or set of men, any part or party, or anything less than the whole. To do this I hold myself free in any election to vote this way or that, with this party or with that party, or with no party, or not to vote at all, if, in so doing, I shall be true to the highest impulse of my own soul. And it is my belief that the hope of America lies in the development of this sort of citizenship. I hold that it is the duty as well as the right of the citizens of any political division to select their own candidates by free petition without the aid or hindrance of any sort of caucus, primary, convention or party machinery; and until this shall be done, I hold that it is my duty, as I have already said, to vote with this party or that party or with no party at all, according to the highest impulse of my own soul.

SPECIAL ASSESSMENTS FOR CITY WORK

Progressive and Unprogressive Citizens—The Municipality the Creature of the State—Abuse of Assessment Law Defined by U. S. Supreme Court—Assenting and Dissenting Opinions—According to Special Benefits Received

By James L. Weeks*

At a time when the desire for well paved streets, safe sidewalks better drainage and other improvements, is not confined to large cities, but is shared by those of smaller populations, even by villages, a brief discussion of some of the principles governing the special assessment of the cost of such improvements may not be untimely.

It is not my purpose to refer to the many well-established rules laid down in the accredited textbooks upon the subject, and in innumerable cases from every state, but mainly to consider some of the cases that have received the attention of the courts during the past year, some of them modifying or limiting, to a considerable extent, the force of certain earlier decisions.

THE TWO CLASSES OF CITIZENS

In every locality there are two classes of citizens. One class, which comprises the vast majority, is anxious to promote the welfare of the community by every improvement that will protect the health or safety of the people; to beautify the city by any means that a progressive American city should employ, and this class willingly and cheerfully pays its share of the cost.

On the other hand there is another class, a small minority, that habitually obstruct, and is perfectly content only when it is able to receive the benefit of the improvements, but by some technicality or legal quibble, escape its proportion of the tax. These people occupy an unenviable position in the community among their fellow citizens, upon whom they seek to shift their tax burden. The courts, wherever possible, give them scant consideration, and where a few fundamental principles, now settled by the courts, are adhered to, there is little danger of the wrong man paying the tax.

We are not to forget that the municipality is a creature of the legislature, simply an agency of the state for conducting the affairs of government, and as such is subject to its control. (Williams vs. Eggleston, 170 U. S., 304.) The legislature may recall to itself and exercise at its pleasure so many of the powers it has conferred upon the city corporation as are not secured to it by the constitution. (People vs. Pinckney, 32 N. Y., 377; Berlin vs. Gorham, 34 N. H., 266; Jersey City vs. J. C. & B. B. Co., 20 N. J., Sq., 360.) Each municipality must, therefore, act within its granted powers and strictly follow the procedure of its charter. (Chicago, R. I. & P. R'y Co., 5 Municipal Corps. cases, 63.)

GREAT DIVERSITY IN STATE AND MUNICIPAL CIVIC LAW

There is great diversity in the provisions of the laws in the different states and in the charters of cities of the same state. In some such improvements are paid for by general tax, in others entirely by special assessment. We find the expense is divided in all sorts of proportions, between the public at large and the property of a particular district, and assessments are made according to frontage, or area, or value.

During the last year the Supreme Court of the United States, and many of the State courts, have had under consideration some of the local assessment problems, and it is to a few of these cases that I desire to direct your attention.

Most of the discussion has arisen from the interpretation of the case of Norwood vs. Baker, 172 U. S. Rep., 267, which excited great interest at the time of its promulgation in 1898. That was a case where a village ordinance, apparently aimed at a single person, a portion of whose property was condemned for a street, the entire cost of opening the street, including not only the full amount paid for the street condemned, but the cost and expense of the condemnation proceeedings was thrown upon the abutting property of the person whose land was condemned. A majority of the court held this to be "an abuse of the law, an act of confiscation, and not a valid exercise of the taxing power."

AN ABUSE OF THE LAW

Let me quote from the prevailing opinion of Justice Harlan: "There is a point beyond which the legislative department, even when exerting the power of taxation, may not go consistently with the citizen's right of property. As already indicated, the principle underlying special assessments to meet the cost of public improvements is that the property upon which they are imposed is peculiarly benefited, and therefore the owners do not, in fact, pay anything in excess of what they receive by reason of such improvement. But the guaranties for the protection of private property would be seriously impaired if it were established as a rule of constitutional

* City Attorney of Jamestown, N. Y., who read this paper before the fifth annual convention of the League of American Municipalities, held at Jamestown, August 21-24, 1901.

law, that the imposition by the legislature upon particular private property of the entire cost of a public improvement, irrespective of any peculiar benefits accruing to the owner from such improvement, could not be questioned by him in the courts of the country. It is one thing for the legislature to prescribe it as a *general* rule that property abutting on a street opened by the public shall be deemed to have been specially benefited by such improvement, and therefore should specially contribute to the cost incurred by the public. It is quite a different thing to lay it down as an absolute rule that such property, whether it is in fact benefited or not by the opening of the street, may be assessed by the front foot for a fixed sum representing the whole cost of the improvement, and without any right in the property owner to show, when an assessment of that kind is made, or is about to be made, that the sum so fixed is in excess of the benefits received.

ASSESSMENT DEPENDENT ON SPECIAL BENEFITS

"In our judgment, the exaction from the owner of private property of the cost of a public improvement in substantial excess of the special benefits accruing to him is, *to the extent of such excess,* a taking under the guise of taxation, of private property for public use without compensation. We say 'substantial excess' because exact equality of taxation is not always obtainable, and for that reason the excess of cost over special benefits, unless it be of a material character, ought not to be recognized by a court of equity when its aid is invoked to restrain the enforcement of a special assessment."

In another portion of the opinion it is stated: "The present case is one of illegal assessment under a *rule or system* which, as we have stated, violated the constitution, in that the entire cost of the street improvement was imposed on the abutting property by the front foot, without any reference to special benefits."

DEPARTURE FROM OLD DOCTRINE

This case was deemed a serious departure from the doctrine theretofore enunciated by the same court. The courts of several of the states have considered the Norwood vs. Baker case during the last year. The Supreme Court of Missouri in Barber Asphalt Co. vs. French, says: "We think Norwood vs. Baker must be read with a view to the particular facts in judgment in that case, and that it was not the intention of the Supreme Court of the United States to overthrow the long line of its own decisions which are in harmony with so many of the decisions of the courts of last resort in the several states of the Union, and upon the faith of which vast property rights have accrued."

In Hadley vs. Dague, the Supreme Court of California declined to hold under the authority of the Norwood case that an assessment according to the front foot plan was unconstitutional without proof showing the assessment to be unjust. The Supreme Court of Oregon in King vs. City of Portland (62 Pac. Rep., 2) says: "We are inclined to believe that the better doctrine deducible from the adjudged cases, including those of the United States, is that the assessment will be upheld wherever it is not patent and obvious from the nature and location of the property involved, the district prescribed, the condition and character of the improvement, the cost and relative value of the property to the assessment that the plan or method adopted has resulted in imposing a burden in substantial excess of the benefits, or disproportionate within the district as between owners."

NEW YORK COURT TAKES ANOTHER VIEW

The Court of Appeals of New York, in Conde vs. City of Schenectady, N. Y. (164 N. Y., 258), sustained an assessment according to feet frontage, for paving purposes, distinguishing between the double proceeding of eminent domain and taxation in the Norwood case by which "the plaintiff lost his land without compensation and was compelled to pay the expense of having the land taken away from him." The court further says: "That the land abutting on the street is benefited by the pavement or improvement of the street and should bear the expense seems very clear. Even where no provision is made by law for the apportionment of the expense according to the frontage of the land abutting on the street, the equity of the principle is so apparent that the rule has been almost universally adopted through the municipalities of the states."

OTHER COURTS AGREE

The frontage method of apportionment, since the Norwood case, has been upheld in Indiana in a stone curbing case, Adams vs. City of Shelbyville (57 N. E., 114); in North Dakota for street paving, Webster vs. City of Fargo (82 N. W., 732); in Minnesota for street paving, State vs. Dist. Court (83 N. W., 183); Texas, on the other hand has condemned the rule unqualifiedly in Hutchinson vs. Storie (51 S. W., 848), and the Federal circuit courts have been uniform in their holding to the same purpose in at least five cases. (Jay vs. City of Springfield, 94 Fed., 409; Loeb vs. Trustees, 91 Fed., 37; Charles vs. City of Marion, 98 Fed., 166; Cowley vs. Spokane, 99 Fed., 840; Charles vs. City of Marion, 100 Fed., 538.)

With such diversity of interpretation it is interesting to have the Supreme Court of the United States construe its own decision. This was done in three cases at the October term, 1900. The Missouri case above referred to entitled French vs. the Barber Asphalt Paving Co., reached that court and it agreed with the interpretation put upon the Norwood case by the Supreme Court of that State, and used the following language: "The question of special benefits and the property to which it extends is of necessity a question of fact, and when the legislature determines it in a case within its general power, its decision must of course be final. We can see in the determination reached possible sources of error and perhaps even of injustice; but we are not at liberty to say that the tax on property covered by the law of 1881 was imposed without reference to special benefits." Another case arose in the District of Columbia, entitled Wight vs. Davidson. This case holds that Congress, having legislative control over municipal affairs of that district, can define the territorial district to be assessed, and that the rule of apportionment rests within the discretion of the legislature and may be directed to be in proportion to the position, the frontage, the area, or the market value of the lands; or in proportion to the benefits as estimated by commissioners."

OLD INTERPRETATION SUSTAINED

From the case of the Town of Tonawanda vs. Lyons I quote the language of the prevailing opinion: "What was claimed was that a state statute, which directs municipalities to assess the whole expense of paving a highway therein upon the lands abutting upon the highway so improved in proportion to the feet frontage of such lands, without providing for a judicial inquiry into the value of such lands and the benefits actually to accrue to them by the proposed improvement, is unconstitutional and void. And it was held by the court below that, notwithstanding the courts of the State may have held otherwise, it was its duty to follow the decision of this court in the case of Norwood vs. Baker, which was regarded by the court below as establishing the principle contended for, and accordingly the defendants were enjoined from enforcing payment of the assessment. But we think that in so understanding and applying the decision in Norwood vs. Baker, the learned judge extended the doctrine of that case beyond its necessary meaning. It was not the intention of the court, in that case, to hold that the general and special taxing systems of the states, however long existing and sustained as valid by their courts, have been subverted by the Fourteenth Amendment of the Constitution of the United States." . . . . "The facts disclosed by the present record do not show any abuse of the law, nor that the burdens imposed on the property of the complainant were other than those imposed upon that of other persons in like circumstances."

The general principle recognized by all the cases to which we have referred, and the proposition upon which there seems to be no diversity of opinion, is that a special assessment should be according to benefits conferred. While absolute equality cannot be attained, it is very evident that any flagrant violation of this general principle will jeopardize the validity of the assessment. It is not the method or system by which the result is reached that is unconstitutional, but the actual confiscation of property without adequate compensation under any system, even under the guise of taxation, that is condemned.

An adherence to the principles declared in the cases we have considered will create a change from which the benefited property owner cannot escape.

THE DEVELOPMENT OF BITUMINOUS PAVEMENTS

Paving Value Discovered by Accident—First Used in Europe Nearly Twenty Years Ago—Not Introduced in America Till 1870—Rapid Development—Many Failures Due to Unscientific Methods—Analysis of Sand and Bitumen Essential to Success

By Fred. J. Warren*

ALL forms of bituminous pavements, whether manufactured from natural or artificial asphalt, are in fact artificial stone pavements. The industry started with the use of the natural rock asphalt from the mines in the Val de Travers, Canton Neufchatel, Switzerland. The mines were discovered in 1721, but it was in 1849 that its utility as a road covering was first noticed.

The rock was then being mined for the purpose of extracting the bitumen contained in it for its use in medicine and the arts. It is a limestone found impregnated with bitumen, of which it yields, on analysis, from eight to fourteen per cent.

PAVING VALUE DISCOVERED BY ACCIDENT

It was observed that pieces of rock which fell from a wagon were crushed by the wheels, and under the combined influence of the traffic and heat of the sun a good road surface was produced. A macadam road of asphalt rock was then made, which gave very good results, and finally, in 1854, a portion of the Rue Bergere was laid in Paris of compressed asphalt on a concrete foundation. In 1858 a still larger sample was laid, and from that time it has been laid year by year in Paris. From Paris it extended to London, being laid on Threadneedle street in 1869, and Cheapside in 1870, and in successive years on other streets. It has also been extensively used in Berlin and other cities on the Continent. The very fine texture of the stone, which is impregnated with bitumen, leaves a surface which is objectionably smooth, and the principal fault which is found in the use of rock asphalt in European cities is its slipperiness.

The early success of the asphalt pavement in European cities led American contractors to seek the manufacture of an artificial asphalt which would have similar qualities, and the first idea was to utilize the tar produced at the gas works which was then almost without value. The result was about twelve to fifteen different compounds varying only in detail, being all essentially composed of tar, or coal tar pitch, and sand, forming an artificial sandstone.

INTRODUCED IN AMERICA

Large quantites of these pavements were laid in Washington and other cities between 1870 and 1874, the stone pavements on Fifth avenue, New York City, being surfaced in this manner. A large number of cities, especially in New England, use this artificial mixture successfully on sidewalks, and the coal tar sidewalk continues to be in greater use in Massachusetts than all other forms combined.

The result on street work was a general failure, and the impression has since generally prevailed that coal tar or its products are entirely unsuitable for roadway construction. The work was done at ridiculously low prices by contractors who had no previous familiarity with the construction of bituminous pavements or incentive to improve, and in fact, at the time the pavements were laid, no one in this country or Europe had any accurate knowledge of the requirements necessary to produce good work. A few of these pavements, however, are in use today, even on roadways, and have been in use longer than any asphalt pavement in existence in this country or in Europe.

CAUSE OF FAILURES

I think all failures can be traced to the use of inferior grades of coal tar, improper methods of preparing the cement, and the use of improper sand in the wrong proportions.

The early failure of the artificial asphalt pavements put them almost entirely out of use in roadway construction. A German chemist, Prof. E. J. de Smedt, had secured a patent on a formula for making a bituminous surface, using natural asphalt as a cementing material. Experiments were made with Mexico, Cuban and Trinidad asphalt; the so-called Albertite, Gilsonite, and other bitumens found in this country were also tried, but generally without success.

Small samples of the Trinidad Lake asphalt pavements were laid in Newark, New Jersey, and in New York City, in 1870 and 1873 respectively, but it was not until 1876 that a pavement was laid on a large scale.

Chemists generally knew that there were physical properties in asphalt which made it impossible for them, by any chemical test, to determine the durability or utility of any given asphalt, and no city could be induced to adopt this form of pavement until, from actual test, it had stood in Fifth avenue in New York, with an average daily traffic of 13,000 vehicles, for several years.

FIRST SUCCESSFUL PAVEMENT

In 1876 Pennsylvania avenue in Washington was in an almost impassable condition, being covered with a rotten wooden pavement. Congress directed its repaving, and appointed a commission consisting of Gen. H. G. Wright and Q. A. Gilmore of the Corps of Engineers, and Edward Clark, architect, to have supervision of the work. The terms of the law directed them to lay the best known pavements. They advertised for proposals, making no restriction as to materials. They received forty-one proposals for every variety of stone, wood, macadam and bituminous pavements Out of them all the commission selected two, and laid these respectively on two-fifths and three-fifths of the avenues. These were the natural rock asphalt from Neufchatel, and the Trinidad Lake asphalt mixture.

Both pavements were completed in the spring of 1877. The Neufchatel pavement lasted about ten years, while the Trinidad Lake mixture was not re-surfaced until 1890.

After 1876, under the present permanent form of government, the asphalt pavement has become the recognized pavement of Washington. It has spread from Washington to many other American cities, Buffalo, N. Y., taking the lead, with something over three hundred linear miles. Philadelphia and New York City also laying large quantities each year.

Many other forms of asphalt have, from time to time, come on the market, and have been laid with more or less success. The physical differences which existed in the new varieties of asphalt made it necessary for their promoters to develop new formulæ, and to endure many poor pavements laid during experimental stages and under close competition.

Some of the new varieties are undoubtedly inferior to the Trinidad while others give every indication of developing into more superior pavements.

It seems to be a fact that the early asphalt pavements caused as much annoyance to the promoters as did the early coal tar pavements, but they were generally laid at a good margin of profit, under a guarantee system which justified and encouraged the most careful methods and immediate repair of defects; and, considering the complications presented in the manufacture of the bituminous surface, it is to the credit of the established paving companies that they have succeeded in laying asphalt pavements so satisfactorily.

IMMENSE DEVELOPMENT OF THE BUSINESS

The business has developed during the past twenty years from one of insignificant proportions to an industry carried on in about one hundred and twenty cities in the United States. There has not been time to develop an organization sufficiently expert to always accomplish success. The commercial end of the business requires so much of the energy of those embarked in it that it has been very difficult to give the proper amount of attention to the scientific development, but it can be expected that during years to come the

* Boston, Mass. This paper was read by Mr. Warren before the fifth annual meeting of the League of American Municipalities, held at Jamestown, N. Y., August 21-24, 1901.

manufacture of bituminous pavements will be so perfected that nothing better can be wished for.

Year by year greater uniformity has been accomplished, taking the industry as a whole, and the average cost of maintenance has been largely reduced on pavements laid in recent years over the earlier pavements at the same age.

As late as 1885 some of the pavements laid by the most experienced companies were complete failures when first laid, and the cost of repairs during the first five years sometimes amounted to twice the original cost of construction of the wearing surface, while the average cost of the most experienced companies for the maintenance of pavements laid since 1890 will hardly average 5 per cent. of first cost of surface during the first five years, and the pavements are frequently in perfect condition without repair at the end of that period.

When it is considered that slight variation from the proper proportions of ingredients brings about disastrous consequence, the improvements are quite remarkable.

EXPERIMENTAL STAGES

In 1885 no one knew what consistency of bituminous cement should be used, and many failures occurred from the cement being tempered too soft, when the surface would slide. Many others occurred from the cement being tempered too hard, when the surface would crack and wear off, and until 1890 there was no accurate method of determining or recording the softness of the cement.

Probably the greatest failures were due to improper selection of the sand or mineral grain. Sands which careful analysis show to be very different are frequently so closely alike in appearance that the most expert eye could not detect the difference. There was no record kept of the nature of the sand until recent years, almost any sand being considered suitable.

All forms of bitumen are subject to decomposition, evaporation or oxidization on exposure. The change is slow in bulk, and a noticeable change in bulk may take centuries. The bitumen is used to surround the grains of mineral matter for the purpose of cementing them together.

ANALYSIS OF SAND NECESSARY

In the Richardson patent formula, used in the Trinidad Lake pavement, the mineral grain is so fine that the aggregate surfaces of the grains to be coated approximate one thousand square inches to each cubic inch of the wearing surface, and the coating of bitumen around each grain is about one four-thousandth of an inch in thickness.

If the sand is not of such graded sizes that the voids are approximately filled by the bitumen used, then on exposure in such minute particles early failure is quite certain, on account of evaporation and decomposition. A slight variation in the size of the grains makes a great difference in the area of grains to be coated with bitumen; and, in turn, in the thickness of the coating when a given proportion of bitumen is used, consequently, upon the length of time which it would take to change its physical condition on exposure.

So great is the difference that a given bulk of sand, of an even size, passing a number 200 screen, contains about thirty times as much surface to be coated as does the same bulk standing between a number 10 and number 20 screen; and about one thousand times as much surface to be coated as does the same bulk of grain passing a two-inch screen and standing on a one-inch screen. In the effort to duplicate the Neufchatel pavement, the entire development and practice has been to exclude from the bituminous mixture all mineral grains coarser than about one-twentieth inch in diameter.

A form of bituminous roadway, known as tar macadam, has been used in England with variable results for more than thirty years, and also in a few American cities. The process employed is defective in principle and does not accomplish uniformity.

I feel that there is little permanent merit in the use of crude tar, or in coating stones of even sizes laid in courses, with an effort to roll the several courses together, as the very life of the bitumen depends upon its proper selection, preparation and use in proper proportions, with a dense mineral mixture.

ADVANTAGES OF COARSE SAND

Considerable investigation has convinced me that both practices are wrong, and that the future development of bituminous pavements will be along the line of using a coarser mineral aggregate than is used in the asphalt pavement, and more modern methods than employed in tar macadam.

The advantages of a coarse grain are:

1st. The coarse grain gives rigidity in itself not acquired by fine grains, and, also, a surface that will not wear slippery.

2nd. It is therefore possible to use a softer cement, which will have longer life.

3rd. A heavier coating will be secured around each grain which will tend to increase the life of bitumen if exposed.

4th. The voids can be greatly reduced, thereby avoiding exposure of bitumen in minute particles.

5th. Lower temperatures can be used in mixing, thus saving in fuel and labor.

6th. Less danger of injuring the bitumen by overheating in the process of making cement or mastic.

The mixture to be used in any particular piece of work should always be determined by experts who will recognize the conditions present, and the special treatment necessary, as the complications are many. Under proper instruction failures would be reduced to a minimum.

A pavement constructed on the above principles would be a bituminous concrete pavement, as distinguished from the bituminous mortar surface of the asphalt pavement.

MOST DESIRABLE BITUMINOUS CEMENT

Owing to the nature of the mixture, I think the best forms of coal tar, properly treated, will furnish the best form of bituminous cement for such a pavement. The coarse stone used should be the hardest procurable, and I can see no reason why, under proper development, the bituminous cement will not bind the mineral matter together until the stone itself wears out, under moderate traffic.

I should not advise placing such a pavement on the heaviest travelled streets of large cities at the start. It would be best to develop perfection under more moderate usage.

I think the term "bituminous macadam" is a suitable name for such a pavement, as it contains all of the good points of a first-class macadam road with durability and cleanliness added, and owing to the coarse grain, it is not as slippery as other forms of bituminous pavements.

An equipment of $3,000 to $4,000 in machinery would be sufficient to lay 800 to 1,000 square yards per day of bituminous macadam, and municipalities under proper supervision could do the work themselves much cheaper than by contract.

The largest sample of pavement laid on this plan is in the enterprising city of New Bedford, Mass., where your worthy vice-president is considering municipal ownership of a bituminous macadam plant in connection with one of the best equipped city boards in this country.

Lowell, Mass., has also borrowed a plant to construct 5,000 yards or more; Holyoke, Mass., has also tried a block and seems well pleased.

The city of Pawtucket, R. I., was the first eastern city, in recent years, to try the use of tar on her streets, doing the work itself under an old formula, but it has recently had a sample of bituminous macadam laid on above plan. Mr. Carpenter, the City Engineer, was not satisfied with the lack of life of his first work, but he accomplished better results than others who have experimented on their own account.

In addition to these pavements already laid, investigations along the same lines are being followed by cities all over the country, and while I have been convinced that the present methods of paving are open to decided improvement, it is surprising that such radical departures should have met with such a general response, showing that the public is not satisfied with any pavement yet devised.

It is not to be expected that perfection will be secured at once, but the additional knowledge being acquired by the present method of recording conditions gives encouragement to the belief that in the future bituminous concrete or mortar pavements will come nearer filling the needs on all classes of streets and roads than any other form of pavement yet devised.

THE PROGRESS OF GOOD ROADS IN THE EMPIRE STATE

International Congress at Pan-American September 16-21 – How "York State" Builds Roads—State Law Works to Perfection —Boomed by Cities and Farmers—Many Miles Already Constructed—130 Miles Under Contract— Plans for 132 Miles Approved

By Edward A. Bond*

History furnishes us with many instances of the failure of important movements which have been launched before the people were ready for their acceptance. A short resume of the events leading up to the present time will show why it is believed by the friends of good roads that the time has now arrived when the subject is receiving the attention and approval of a large proportion of our citizens. While much work has been done by good roads advocates throughout the Union for years past, the results have been small except in the states of Massachusetts, New Jersey and Connecticut (and more recently in New York) as far as securing governmental or state aid and assistance is concerned.

STATE PASSES GOOD ROADS LAW

Early in 1898, through the efforts of good roads advocates, assisted by Senator W. W. Armstrong, Chapter 115 of the Laws of 1898, known as the Higbie-Armstrong Law, appeared on the New York State Statute Books, and provided for the improvement of public highways by means of state aid, placing the work in charge of the State Engineer. This law is of such excellence that more space will be devoted to it before closing this article.

Upon assuming office January 1st, 1899, I found that some work had been commenced under this law, an appropriation of $50,000 having been made to carry out its provisions. It was found that a first-class stone road-bed sixteen feet wide, compacted to six inches, with hard limestone for lower course and trap rock for finishing course, properly drained, rolled and macadamized, would bring the price per mile of such an improved road to $10,000. This also includes the expense of preliminary surveys and maps as well as inspection and engineering during construction.

COST VARIES IN DIFFERENT STATES

The cost of improved roads in adjoining states varies, in some cases being more than this and in some less; but where the same general conditions prevail as in New York State, the average cost for a road similar in size and construction is approximately $10,000. During the past year it has been found possible to reduce the cost so that a fair average per mile of all roads under contract in this State would probably not exceed $8,000.

To one who thoroughly understands the amount of labor and the expensive material which go to make up the cost of an improved macadamized 16-foot road these figures do not seem excessive; but it is undoubtedly a fact that they do seem large to one who has only a superficial knowledge of the subject.

Many petitions were filed under the above law, some counties asking for surveys for many more roads than the county would ever build; the wealthier counties, however, were anxious to take advantage of this liberal law and were ready to furnish their share of the cost of as many roads as they could obtain; but in many cases when plans and estimates of cost were presented considerable criticism and complaint was made as to the expense. Believing that if the matter were fully understood by the Boards of Supervisors of the various counties (who represent the people in all of this highway improvement work), it was arranged to hold a convention in Albany during February, 1900, to which each county could send two or more supervisors as delegates. A two days' session was held with a large attendance and the subject of improvement of public highways by means of the State Aid Law was discussed with the utmost freedom. No effort was made to influence the course of the convention, the desire being to have the views of all expressed as fully as possible. The meeting proved so satisfactory, that upon motion the organization was made permanent and met again in February, 1901, and at this latter convention, at which many new delegates as well as many of the delegates of the previous year were present, a noteworthy incident

FIG. 2. STONE QUARRY IN MONTGOMERY COUNTY

was the fact that during the entire meeting no word of criticism was uttered in regard to the roads or their cost as they are now being constructed under the State Aid Act above referred to.

LARGE APPROPRIATIONS GRANTED

The small appropriations which had heretofore been made had somewhat retarded the action of many counties in presenting petitions by reason of the feeling that many years might elapse before sufficient state funds would be available for the improvement desired. The appropriation of $150,000, made by the Legislature in 1900, enabled the State Engineer to take up with increased vigor the surveys and preparation of plans for roads covered by petitions on file, and in 1901 the appropriation of $420,000, secured through the co-operation of Governor Odell, who is deeply interested in this work, placed the Good Roads movement in this State fairly on its feet and has given it an impetus which will undoubtedly carry it to a prominent point. There is no doubt that the conventions referred to were largely instrumental in securing the large appropriations of 1900 and 1901, as it enabled the Supervisors, and through them the people of their respective counties, to acquire a better knowledge of the matter than they had before possessed and through them the influence extended to their representatives in the Legislature.

I am firmly of the opinion that annual conventions of Supervisors will prove a most efficient aid in promoting the Good Roads movement in any State which is about to inaugurate a system of state aid.

NATIONAL CONVENTION PLANNED

In view of the results attained from these Supervisors' meetings it seemed plain that a National Convention would be of great value,

* Edward A. Bond, State Engineer of New York, lives in Watertown. He was born in Dexter, Mich., April 22, 1849. His experience as an engineer has extended from 1867, when his first work was done for the Delaware, Lackawanna and Western Railroad. He continued in the employ of that company till 1870, when he became assistant to Chief Engineer Thomas W. Spencer, of the Utica and Black River Railroad, whom he succeeded in 1875, and in that capacity had charge of the building of the lines from Lowville to Clayton and Ogdensburg. Mr. Bond remained in this position till the spring of 1886, when he became chief engineer and general superintendent of the Carthage and Adirondack Railway, from Carthage to Benson Mines and the Oswegatchie River. In 1889 he removed to Watertown and became a member of the engineering firm of Hinds & Bond. He has designed and executed many important engineering and public works at various points in this and other States. Mr. Bond is a member of all the Masonic bodies up to and including the thirty-second degree. Mr. Bond was nominated for State Engineer by the Republican State Convention in 1898, and received 653,114 votes, to 643,432 cast for Martin Schenck, Democrat. Renominated in 1900, Mr. Bond received 811,009 votes to 688,300 cast for his Democratic opponent, R. S. Stuart.

and it was suggested by the Supervisors of Erie County that the Pan-American Exposition would furnish a propitious place for such a convention. After carefully considering the situation I addressed letters to the officials of every State in the Union for the purpose of ascertaining the prevailing sentiment in regard to holding such a convention or congress. The replies were so favorable as to convince me that all that the several states required to secure their representation at such a convention was proper organization and an opportunity. I therefore requested Mr. W. H. Moore, President of the National Good Roads Association, of Chicago, to assume the responsibility of calling the convention, to which he very kindly assented; and at a personal interview which we afterwards held with Director General W. I. Buchanan and other members of the board of managers of the Exposition, all of the necessary arrangements were made for carrying out the project.

Under date of August 5th, 1901, Mr. Martin Dodge, Director of the U. S. Department of Agriculture, Washington, D. C., in response to a request from Mr. Moore, issued an invitation to attend an International Good Roads Congress to be held in the city of Buffalo September 16th to 21st, 1901.

Accompanying this invitation was a circular letter signed by Mr. W. H. Moore, stating that the object of the convention is that of "arousing attention, stimulating scientific investigation, making practical demonstrations and collecting and disseminating information relating to the best methods of road construction and maintenance." The letter also states that: "It is designed to devote a portion of time to demonstrating the scientific methods of modern road construction by building sections of the various classes of roads, including earth, oil, gravel, stone, tar, macadam, vitrified brick," etc. A railroad train equipped with modern road-making machinery will be on exhibition and the deliberations of the congress will include general discussion, together with experimental tests and experiences of the several countries of the world and the states of the Union. Addresses will also be made by prominent statesmen and officials, competent engineers and scientific road experts from the various nations of the world. Mr. Moore also calls attention to the fact that this is the first International Good Roads Congress ever held.

OBJECTS TO BE ATTAINED

Some of the objects hoped to be attained are an interchange of thoughts and experiences; a better understanding of the necessities of the various localities in different sections of this continent and a discussion as to the best legislative enactments required in the several states and countries interested, for promoting the construction of good roads.

The Higbie-Armstrong Act, of New York State, provides that the Board of Supervisors of any county may, and upon the petition of the owners of a majority of linear feet fronting upon the public highway in such county, must pass a resolution that public interest demands the improvement of such highway, or a section thereof, and transmit a certified copy of such resolution to the State Engineer and Surveyor. If, upon investigation, the State Engineer determines said highway is of sufficient public importance, taking into account its use, location and value for purposes of common traffic, he may cause the necessary surveys, plans, specifications and estimate of cost to be made and

MAP SHOWING GOOD ROADS WORK IN NEW YORK STATE

FIG. 3. PUMPING WATER FOR SPRINKLING THE STONE

transmit the same to the Board of Supervisors. Upon the receipt by the State Engineer of a certified copy of a resolution adopted by majority vote of said Board appropriating one-half of the estimated cost the road receives a number and is taken up for construction in its regular order, as shown by the consecutive numbering. The State pays 50 per cent. of the total cost, the county 35 per cent. and the town or individuals owning property abutting on the improved road 15 per cent.

THE LAW WORKS SUCCESSFULLY

This statute has worked with excellent success in New York State, as it gives to the counties desiring improved roads opportunity to have them upon expressing the willingness to supply the funds for one-half of their cost. The zeal for good roads leads to the suggestion of various plans for accomplishing the object sought; but from careful observation, after having studied the systems in various states and experiences of the officials of the general government having good roads matters in charge throughout the Union, I am convinced that no statute can be framed which in all its workings will bring better results than can be attained by a rigid adherence to the method prescribed in the so-called Higbie-Armstrong Law.

Wherever the construction of good roads is to be conducted in the future, I am in favor of a state law with the right of local option and of allowing the people of any county (or civil division corresponding substantially to one of our counties) the right to vote upon the question of borrowing money for that purpose. If the majority of the people of one county wish to build a certain number of miles of good roads it should not be in the power of the minority to prevent it; nor should the people of another county be able to prevent it; nor, on the other hand, should the people of any county be forced to incur the expense of improving their highways unless it is desired by the majority.

WOULD NOT REVIVE OLD STATE ROADS

It has been suggested by some that long continuous stretches should be constructed, something in the nature of reviving the old so-called State Roads. It is my belief that such a system would to a greater or less degree tend to paternalism, and thus cause the counties in the outlying districts to feel that they were being discriminated against and were being taxed for the more fortunately located counties. For this reason it would seem better to cover the State with a network of durable roads over which a full load could be drawn at all times.

Under the Higbie-Armstrong law it is true that the roads are at first in small sections and unconnected, yet they are of great benefit even under these circumstances, as many of them are the main traveled roads leading into cities, and in many cases such a road two or three miles in length will accommodate the traffic which centers for many miles around this inlet to the city. Each county in a state has one or more prominent business centers in which the great bulk of trade is transacted. The roads from various directions naturally converge in these cities, and while we hear arguments that the cities get the most benefit of the roads by reason of being first improved near their borders, yet when the subject is carefully considered we see that this method is most just. These cities being the vital centers for each of the counties in which they are located and approached

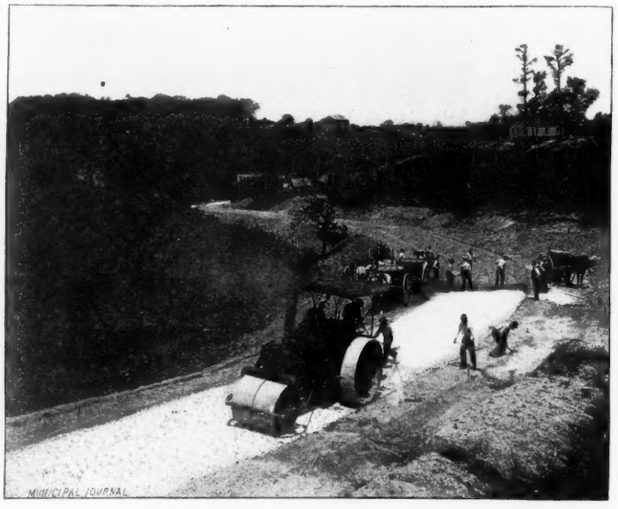
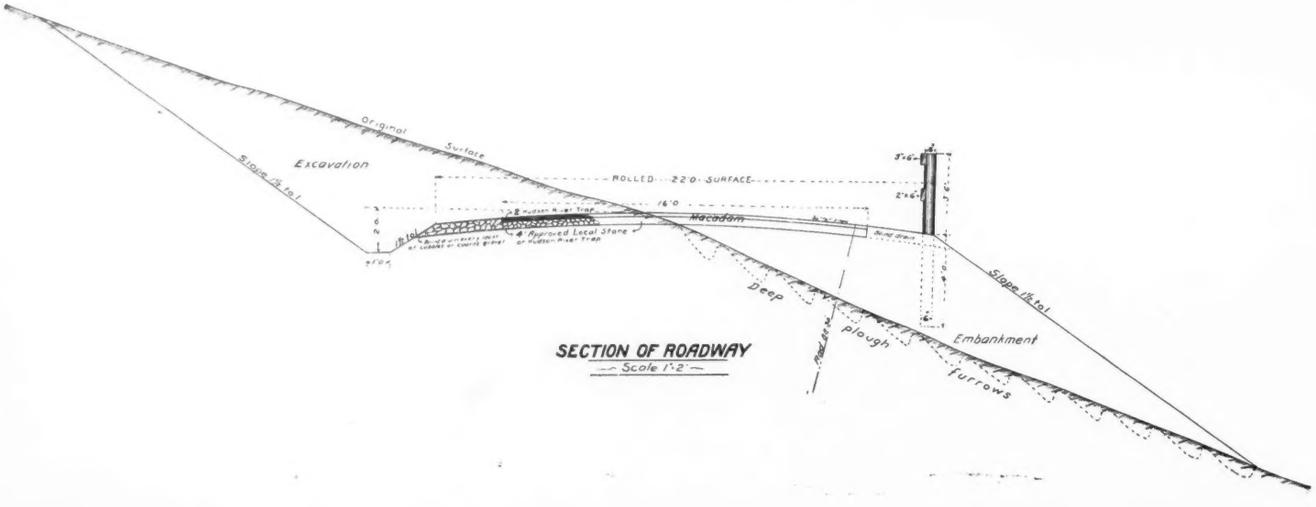


FIG. 1. DELAWARE TURNPIKE, ALBANY COUNTY

from any direction, shows the wisdom of this law, which leaves the Boards of Supervisors to determine by a majority vote just what



SECTION OF ROADWAY
Scale 1"-2"

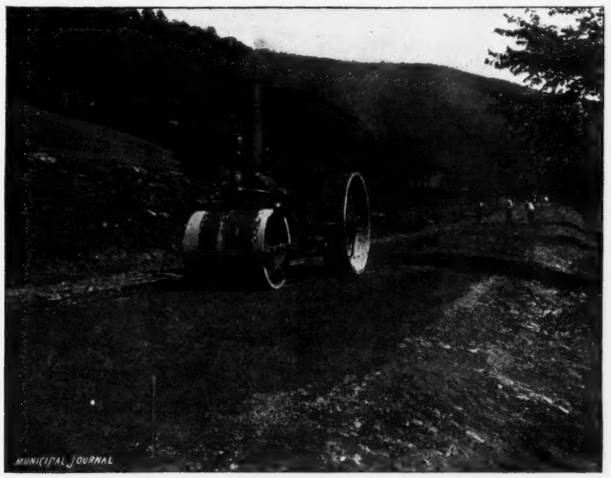


FIG. 5. ROAD IN ULSTER COUNTY

roads in their county shall be improved and they are in such close touch with the voters of their county that justice is assured in each case. Under this law the call for the improvement of the highway starts with the people, passes from them to the State, and after surveys and plans have been made, so that the exact cost of the improvement is known, this information is returned to the people for their final sanction or rejection, then if the highway is desired by the people, they are called upon as evidence of their good faith, to supply one-half of the funds for its construction.

MACADAM BEST ROAD FOR THIS STATE

The rule governing specifications for roads will vary somewhat in different states, the States of Connecticut, Massachusetts and New York being quite similar, while the western prairie states have very different conditions to meet. As a general proposition it is conceded that for New York State the most economical road in the end is what we speak of as a macadam road. In the accompanying pictures we find these roads in different states of progress.

Illustration No. 1 is in Albany County, known as the Delaware Turnpike, and represents an entirely new location of the road, with grades varying from 3 per cent. to 5 per cent., while on the old abandoned road the grades were at places as steep as 12 per cent.

No. 2 shows a stone quarry in Montgomery County where they are quarrying stone to be drawn direct to the crusher, which is some fifty feet away.

No. 3 shows the manner of pumping water for the purpose of sprinkling the stone during the process of rolling.

No. 4 shows the completed road. These last three pictures, Nos. 2, 3 and 4, are all taken on the line of road No. 33 in Fulton County. In Ulster County, in the heart of the Catskill Mountains, a contract was awarded to the Town Board.

No. 5 shows a portion of that road practically completed. In the distance men are sweeping in the screenings and in the foreground the roller is doing its final rolling. This work is handled very successfully by the town authorities and is a practical illustration of how successfully the different localities can take up their own road building when they once gain the proper knowledge of road construction.

No. 6 is a cross section of the macadam road as called for by plans and specifications. The road bed is first graded to the proper crown and rolled with a 10-ton roller until it is of the same consistency throughout, then about 5½ inches of crushed local stone, varying in size from 1½ inch to 3 inches, as it comes from the screens, is spread upon this and a 10-ton roller is passed over it from six to ten times to knit the stone in place; afterwards a coating of about one inch of local stone or limestone screenings is spread upon the road and it is again rolled and these screenings are brushed with heavy rattan brooms during the process of rolling until all of the interstices between the stone are finally filled with screenings. Great care is taken that all of the screenings shall be confined to the joints of this lower course of stone so that the top of this course shall have rougher stone road for binding with the upper course. The lower course when rolled gives four inches thickness.

The upper course is preferable made of Hudson River Trap Rock, varying in size from 1 inch to 2 inches, which is spread upon the lower course for a depth of from 2¾ to 3 inches, and is rolled similar to the bottom course, upon which is spread about one inch of limestone screenings; then the process of rolling is conducted similar to that in the lower course, but after having been rolled ten times water is sprinkled with an ordinary street sprinkler, following this by rolling, and continuing this process, at the same time using rattan brooms until the stone is so thoroughly wetted that a wave of lather will precede the roller. This is an indication that the work is completed, and after having from four to ten days to properly dry out and set, the road is open and ready for use.

FIG. 4. COMPLETED ROAD, FULTON COUNTY

The following tables show briefly the progress which has been made in highway improvement work in this State up to August 1, 1901:

PETITIONS RECEIVED

Year.	No. of Counties.	No. of Petitions	Mileage.
1898	17	83	502
1899	13	38	157
1900	16	36	155
1901	19	68	215
Totals		225	1029

SURVEYS AND PLANS

1898	38 miles
1899	145 miles
1900	370 miles
1901 to August 1	158 surveyed
1901 to August 1	211 mapped

ROAD CONSTRUCTION

No. of roads.	Work in different counties.	Miles of road completed, under contract or approved plans.
16	9	37.68 completed
43	17	130.34 under contract
41	12	132.03 plans approved

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NEW YORK, SEPTEMBER, 1901

EDITORIAL COMMENT

PUBLIC sentiment is growing in favor of non-partisan municipal campaigns.

THE official who takes the public into his confidence, forearms himself against public scandal.

FRANCHISE steals, similar to that recently occurring in Philadelphia, would be impossible if the people, their rightful owners, voted upon their disposition.

A DAILY record of important events and a weekly report of the principal transactions of every municipality should reach the public through the daily press.

SEVERAL of the papers presented at the recent meeting of the League of American Municipalities at Jamestown last month will be found in this issue. As our space is limited we shall be obliged to defer the publication of the others till next month.

THERE never was a time when the newspapers of the larger cities were so helpful in obtaining better civic conditions as at the present. There is, however, an opportunity for even greater improvement. The best reporter on the staff should be assigned to City Hall duty.

"VOLUME X of the MUNICIPAL JOURNAL AND ENGINEER," writes one of our readers, "contains the largest amount of municipal facts that I have ever seen between two covers. It certainly should find a place in the library of every Mayor and city official in the United States." It will be sent to any address for $2.50, charges prepaid.

THE city official who does not take the time and trouble to inform himself about the proper discharge of his duties is sure to be an expensive luxury for the taxpayer. The modern printing press has so cheapened the manufacture of books and periodicals upon any subject that there is no reasonable excuse for any official neglecting this duty.

THE *Gazette*, of Burlington, Vt., in quoting an editorial from the MUNICIPAL JOURNAL AND ENGINEER, the other day, was convinced that if the city was not already a subscriber it should be, and closed by saying: "Really, we didn't set out to puff the publication referred to, but it looks as though it would be a good job for the city of Burlington to subscribe for it."

IT is a shame that a city of the size and importance of Albany, N. Y., should not have transfers on its street car system, but we fail to see how the blame or their absence should be shouldered on to Mayor Blessing, as is done by our contemporary, the *Press-Knickerbocker*, of that city. The Mayor has no power to enact an ordinance obliging the street railway company to issue transfers to its patrons.

LET all the world take notice that it is a proud day for Chicago! Coon songs are rudely jostled aside by the multitudes which gather in the public parks to listen to the band concerts. Classical music is preferred. It was not so many years ago when the opposite was true of Chicago's musical taste, but the preference this season has been for selections from "Faust," "Tannhäuser," etc. Vaudeville music has had no show.

THE most effectual reform is that which comes about through the instrumentality of the administration in power. That is the only hopeful side of the reforms now going on in the New York and Chicago Police Departments. Mayor Harrison is responsible for the latter and District Attorney Philbin, a non-Tammanyite but belonging to the present administration of Greater New York, is responsible for the former, although he has been greatly assisted by the "Parkhurst Society."

THE crowded street car is a source of annoyance to the busy man during the rush hours in New York and in every large city. People who are in a hurry to reach home, thoughtlessly, and sometimes wilfully, crowd in between the seats of open cars, making a nuisance of themselves to the occupant of the seat. If an ordinance were passed providing that after all seats were filled the car should proceed on its way until some passenger desired to get off, and only stop to take on a passenger when there was a vacant seat, it might help to remedy the evil.

OUR esteemed contemporary, *World's Work*, correctly describes the cause of bad city government and the one way to purify it: "The political bosses are merely acting according to their lights—the fault is with the so-called "better element." We shall never have honest and efficient municipal management until the obsolete party fetish is banished from consideration and men are elected to civic office to run the city's affairs as a private business is run—every action being published abroad and all good citizens unanimously holding them strictly accountable for each deviation from the path of public welfare."

TROLLEY car accidents are of daily occurrence in this city, many of which prove fatal. Most fatalities would be avoided by the use of well constructed fenders. A woman and her child were run over and killed by a trolley car in Birmingham the other day, an accident which the citizens claim would not have happened if fenders had been used. A civic administration, which has the power and does not compel street car companies to equip their cars with modern fenders, is guilty of criminal neglect and there should be some way provided for punishing the executive and legislative members of any administration which permits the continuance of such conditions.

THE Master Barbers' Association of the State of New York, at its annual session last month, passed a resolution authorizing the association to push a bill before the next Legislature which will establish a State Bureau for the sanitary inspection of barber shops. The law works well in Michigan and other states, and there is every reason why the Empire State should enact such a law without further delay. There is no readier method of conveying disease than through the use of unclean or disease infected barbers' equipment. A slight abrasion of the skin while shaving or cutting hair gives free entrance to any germs of disease that may be on razors, combs, brushes, scissors or towels, and for public safety all these articles should be sterilized and a law enforcing it should be adopted.

THE GOOD ROADS CONGRESS AT BUFFALO

THE present good roads movement, which has taken such a firm hold of every section of the country, is one of the indirect results of the advent of the bicycle and the automobile. And the International Congress of Good Roads which will be held at Buffalo the middle of this month is a fitting climax to an enthusiastic series of good roads meetings, national and state, which have been held during the year. This particular gathering is the outcome of a suggestion of Edward A. Bond, Chief Engineer of New York State, made to some of the prime movers in the work. The idea was immediately pushed by Director Dodge, of the Department of Public Road Inquiries, Washington, and by Mr. W. H. Moore, president of the National Good Roads Association. There is every reason why this meeting should be the greatest in the history of the movement and provocative of still greater enthusiasm.

The development of good roads sentiment has been stupendous in its magnitude and widespread in its scope, influencing nearly every State in the Union and spreading even among the Canadian Provinces. There has been held, this season, one national and more than a score of state meetings, all of a most enthusiastic character, in the interest of better highways. At least a dozen new state organizations have been created, most of which are already planning an active campaign for the winter months, including the passage of needed legislation. Backed, as they are, by all classes and trades, the promoters of better road conditions will not fail of accomplishing anything which may be reasonably asked in the way of new legislation or larger appropriations. In Mississippi a new contract road law has lately been adopted, and the work of the Good Roads Train, which built several samples of good roads on its journey north from New Orleans to Chicago, has fanned the enthusiasm into a flame. The same spirit animates Louisiana, Kentucky, Tennessee and many other states. Under the direction of Commissioner of Highways A. W. Campbell, of Toronto, a good roads train has made extensive tours through several provinces and, if anything, the interest is greater there than on this side of the border. At any rate, the General Government has backed the movement with more liberal appropriations. The Canadian Government, at the last session of Parliament, appropriated a million dollars for the general improvement of the highways, while, for the same purpose, our Government only set aside a few thousand dollars! The next Congress should double the appropriation of Canada and encourage this work in a more substantial way.

Acknowledgment should be made of the good work performed for several years past in New Jersey, Connecticut, Massachusetts, New York, Michigan, Minnesota and other states which have been early in the field. The work of these States has formed the leaven which is leavening the whole lump. The spinning bicyclist and the flying automobilist have been the messengers who have been largely helpful in disseminating throughout the country the sentiment in favor of better highways. Although not so recognized they were the actual forerunners of better roads. Long may they live to enjoy the fruits of their labors!

In conjunction with the work of the good roads train, which is to be operated again at this international meeting to demonstrate its utility as a promoter of better highways, there should be assembled a large assortment—in fact it should be complete—of every kind of machinery, apparatus or appliance used for the construction or maintenance of good roads, in city, town or country. By this means and this means only can the best results accrue from this assembly of good roads experts and especially to the larger number who will attend as learners.

If the orators and the experts who will constitute the instructors at the International Congress of Good Roads at Buffalo, will omit theories from their discussions, endeavoring by every available means, including samples of road building and explanations of the machinery involved, to demonstrate the practical phase of the question, they will not fail to enlist the sympathy and active co-operation of our friends in the small towns, villages and rural districts. Doing this, any claims which may be made, which are not capable of demonstration on the spot, will be readily accepted by those who attend.

THE CZAR OF McKEESPORT

THE Mayor of McKeesport by his autocratic and unjustifiable attitude toward "the man looking for work" as well as the "trust," has earned the right to a seat by the side of the "dictators" of New York and Philadelphia. Let us hope that the official career of the other two will be as short lived as that of the new aspirant for notoriety is sure to be. Whether half the statements made about the Mayor of McKeesport are true or false, it matters not, for on his own confession he is a partisan dispenser of justice and executive authority, and, therefore, unfit to occupy his position of trust.

No mayor has the inherent, acquired or delegated right to take sides in a public dispute, that is, as an official. As a private citizen he has the perfect legal right to take sides with and promote the interests of any cause, man or set of men, although, even here the question of expediency would arise, when the moral right to take sides in such an issue would be gravely questioned. This is one of the instances involving the judicial phase of an executive's official life. As the chief executive of the people he has no right to take sides with a certain class involved in a public dispute, be that class in the majority or minority. When he took the oath of office, he obligated himself to protect the lives and property of all the people living within his bailiwick.

Stripping the question of all sentiment and without impugning the motives of Mayor Black, without taking part in the discussion of the question involving the relative rights of capital and labor, but simply passing upon his acts as the Mayor of that city, there can be but one verdict, viz., that he has overstepped the bounds of his authority and unjustly discriminated against private citizens, both rich and poor, whom he took his oath to protect. Even though he may be an ardent supporter of the cause of the strikers privately, in his official capacity he should be extremely cautious about rendering decisions which would or could be looked upon, by even those opposed to him, as unjust or unwarranted. If reports are true, he is guilty of a greater offence against the people than even the offense he ascribes to capitalists. The latter have acquired a large property by industry and prudence, in the management of which they have the inherent right as well as that vouchsafed to them by the Federal and State Constitutions, to do as they please so long as they do not endanger the lives and property of others, while the Mayor is the servant, not the master, of the people, and he is in duty bound to perform his work after the manner prescribed by the people. Therefore, when Mayor Black refuses to protect the property of the steel works against the attacks of the strikers, when he refuses to permit a man who is looking for work to obtain work from the mill owners, when he refuses to protect the man out of work from the murderous attacks of the hoodlum element always found among labor strikers, then he brands himself as an unjust judge and betrays the trust imposed in him by the people.

Mayor Black has gone even further than simply to lend his own aid and sympathy to the strikers; he has turned the machinery of the municipal government against all opponents and even those who are trying to be neutral in the disturbance. His reported arrests and arbitrary punishment, even without the semblance of a trial, of innocent and law-abiding residents and strangers, are outrages which should receive speedy and merited rebuke by his removal from office and just punishment. Not satisfied with this arrogant action, he has sworn in strikers as special policemen to preserve law and order!

Deputy Sheriff Lowery put the case bluntly and justly when he was called upon to protect the life and property of citizens of McKeesport: "There should be no occasion for my men to be here, and there would be none if Mayor Black would do his duty. In his overwhelming desire to make himself popular with the laboring man he has forgotten that there are others besides strikers who have rights here, and that it is his duty as a public officer to protect these people. The law knows no labor unions."

It was reported to Mayor Carter Harrison of Chicago that Mayor Black had sent a personal representative to him to induce him to take the same action and swear in strikers as special policemen to serve in Chicago. When asked if such a messenger had called, Mayor Harrison replied: "I have not heard from any representative from Mayor Black. If his errand is as reported he might as well have stayed in

Pennsylvania. My idea of a police force is that it is a non-partisan body and should take no part in any trouble except to preserve order and protect property. I would no sooner think of swearing in strikers as special policemen than I would of swearing in the trust magnates who are carrying on the other side of the fight."

Strong partisan as Mayor Harrison is, he takes the just and only view of the situation in McKeesport. His is the attitude which should be taken by all public officials in whatever capacity they may be serving the people—that of a servant and not of a dictator.

POSSIBLE INCOME FROM CITY BRIDGES

THE question of bridges is exercising New York just now because Manhattan Borough must have immediate and frequent touch with the boroughs across the East and Harlem rivers, and eventually with the towns across the Hudson. But commonly this question is presented to other large cities in less urgent and alarmingly expensive form; for where there is a large city there is generally a more or less navigable, and therefore more or less broad river, owing to the fact that cities grow first and grow fastest where there is access by ships. The experience of New York is therefore useful also to many other places which are not so strangled by waterways in their efforts to establish close connections with their suburbs as is the case of Manhattan and the rest of Greater New York.

It is not expense alone but size that makes the problems of East River bridges difficult. They must be so high above high-water level and their approaches must be so extensive that treatment proper to a bridge where there are no ocean-going ships to take into the calculation cannot be applied to enormous structures of the kind represented by the Brooklyn, and what it has been proposed to call the Bowery Bridge, viz: the new bridge over the East River between the lower East Side and Williamsburg, Brooklyn. The expense of building these bridges is tremendous and not less alarming is the cost of keeping them in condition. Is there not some way of making an income for these structures which in the course of a generation will offset interest on the millions poured out by tax-payers for their building?

One may take for granted that the toll system in its simple, direct form, whether for foot passengers or wheeled vehicles, is out of the question. It is gone, so far as great centres of population are concerned. Tolls on trolley and steam cars are of course available and should be made to yield all they can bear. But there are other sources of income of which bridges do not avail themselves because they are forgotten, or because, not having been foreseen and provided for in the original plans, it is costly or inexpedient to arrange matters so that they can be brought into play. The warehouses and storage houses under the arches of the Brooklyn Bridge represent an attempt to increase the income through rents. It was calculated that goods very combustible but not explosive would seek shelters that are absolutely fireproof and others that suffer from depreciation in structures built of wood and brick might do better in warehouses all stone and iron. But these rents go a very little way toward reducing the expenses of the Brooklyn Bridge.

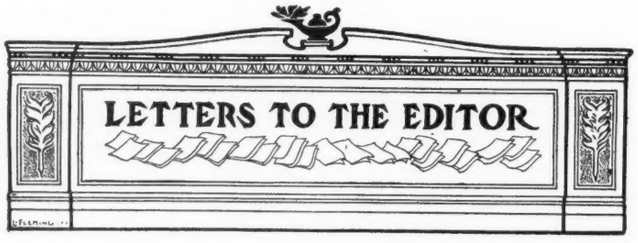
The principle to follow in future, say with the third bridge to be erected over the East River at Blackwell's Island, is to take advantage of the factor which drives rents high in city streets. That factor is the number of persons passing a given point between morning and midnight. A great bridge over which people are swarming in both directions, afoot, on wheels or in trolleys, is in many respects an ideal property, if it can be treated as a street and offer ground-space to let for buildings which would be sought by merchants and retailers who pay well for places along the great currents of population.

In the case of comparatively small rivers like the Harlem this would hardly be possible, although something of the sort exists in Rochester with respect to the Genesee River. There, however, the problem is not complicated by the necessity of allowing vessels to pass; while the Harlem must have turning, draw, rolling or "bascule" bridges, except where the high banks allow of lofty structures like High Bridge and Washington Bridge. But the bridges over the East River are perforce so large that spaces for small buildings could be arranged with little extra cost and the weight added to the structure of such buildings could be easily added to the calculated strain, while the crowds that pass would offer just the inducement that secures good and steady income from rents.

Let us take the Blackwell's Island bridge as an example. The pressure of population is making this island too small for the institutions there established and already forces the city to arrange for branch hospitals and almshouses elsewhere. Suppose the city decides to remove entirely from Blackwell's Island and turn it into a park in accordance with suggestions made heretofore in the press. The bridge across the two comparatively narrow arms of the East River would then assume a very different aspect and might be treated in a novel way which would add to the beauty of the city and do incalculable good to the health of citizens, beside giving them much pleasure, and yet provide a steady income to be used for the gradual liquidation of the cost of the bridge.

The crude idea, to be worked out by our best architects and engineers, would be a tower in the centre of Blackwell's Island for use as an outlook and place for restaurants and amusements at a height where the air is good and the view superb. The bridge itself would run from the tower into Manhattan and Long Island City. Its height would give fine views also, excellent air, and chances for places of recreation, while the crowds passing along it would make shops on either side of the roadway very desirable. These shops, restaurants and other buildings would be small and on a given scale. They would not be continuous, but leave spaces from time to time whence pedestrians could look down on the city and waterways. In these spaces the sites for monuments and statues could be left for a future time when embellishment is possible. Elevators in the tower and at other points near the four banks of the two arms of the East River could give foot passengers access to the bridge. The island itself would accommodate great crowds and some of the costly buildings already there could be turned to account as museums and galleries, as restaurants and other places for the use of the public. There are no engineering difficulties to overcome in carrying out a plan thus rudely sketched. The advantages that would accrue to real estate on Manhattan and Long Island within a certain radius from the approaches to such a bridge can be easily foreseen. In summer such a bridge would be a godsend to the millions. It could be made a beautiful thing in itself with no extra expense, and the income from its various parts would lighten the city's budget.

CHARLES DE KAY.



WANTS TO CREMATE NIGHT SOIL

GRAND RAPIDS, Mich., August 21, 1901.

Editor MUNICIPAL JOURNAL AND ENGINEER:

Can you tell me of a garbage destructor which will handle night soil in a sanitary manner; one that will cremate it without giving off offensive odors? We have a garbage crematory which disposes of other refuse in a fairly satisfactory manner, but it fails in the one point mentioned. WILLIAM DELANO, *Health Officer.*

There are two types of crematories which have successfully disposed of night soil for years—the Morse-Boulger Garbage and Refuse Destructor, 39 Cortlandt street, New York City, and the Decarie Garbage Incinerator, Montreal, Canada. Full particulars will be mailed on application to either address. The former company has recently installed an institutional destructor in Philadelphia and has had similar plants in successful operation in this and other cities for years. The Decarie incinerator has just been installed in Minneapolis and thoroughly tested, an account of which will be found elsewhere in this issue.—[The EDITOR.

TYPEWRITES MUNICIPAL RECORDS

LEXINGTON, KY., August 15, 1901.

Editor MUNICIPAL JOURNAL AND ENGINEER:

For the benefit of my "brother city clerks" I will say that the proceedings of the Boards of Aldermen and Councilmen are typewritten upon the McMillan patent books with the Remington broad carriage machine.

J. E. CASSIDY, *City Clerk.*

RULES FOR CONDUCT OF CITY OFFICIALS

LOS ANGELES, CAL., August 10, 1901.

Editor MUNICIPAL JOURNAL AND ENGINEER:

In reply to the question of one of your readers, who asks for "novel or especially efficient methods employed in the administration of the affairs of the city clerk's office," our rules for efficiency are as follows:

1. Appointment of those competent to fill the place assigned.
2. Appointment of persons of good character and standing in the community.
3. Appointment of those who do not think it necessary to keep a path warm to some saloon to obtain political preferment.
4. Requiring promptness in keeping up with the work in hand, and no putting off until to-morrow what can be done to-day.
5. Giving courteous treatment to everyone entering the office. No politics, no smoking, no loud and boisterous discussions. These are some of the rules adopted by mutual consent in this office.

C. H. HANCE, *City Clerk.*

ORDINANCE FIXING LIGHT RATES

BOSTON, MASS., August 20, 1901.

Editor MUNICIPAL JOURNAL AND ENGINEER:

Can you inform me if any town has an ordinance fixing the rates on electric current and gas of the resident companies or company? If so, please quote the schedule for the information of

EDWARD T. MATTHEWS.

Marshalltown, Ia., has adopted a schedule compelling the companies to vary their charges according to the amount of gas or electric current consumed. The scale is as follows:

Companies shall not charge a price exceeding $1.85 per 1,000 cubic feet, when the gas is used for illuminating purposes, or $1.60 per 1,000 cubic feet, when used for fuel purposes. The following discounts shall be allowed for the prompt payment of bills, *i. e.*, on or before the tenth day of the month.

GAS

Fuel		*Light*	
On bills of—	Discount per 1,000 cu. ft.	On bills of—	Discount per 1,000 cu. ft.
Under 4,000 cu. ft. per month	$.10	Under 1,000 cu. ft.	$.10
4,000 cu. ft. and over per month	.15	1,000 cu. ft. and over	.15
8,000 cu. ft. and over per month	.20	2,000 cu. ft. and over per month	.20
20,000 cu. ft. and over per month	.25	40,000 cu. ft. and over per month	.25

On all bills not exceeding $.50 per month a rental of meter not to exceed $.25 per month may be charged.

ELECTRICITY

The price is sixteen cents per 1,000 Watt hours, except

On bills of—	Price per 1,000 Watt hours.
50,000 Watt hours and over per month	$.15
75,000 Watt hours and over per month	.14
100,000 Watt hours and over per month	.13
150,000 Watt hours and over per month	.12
200,000 Watt hours and over per month	.11

A minimum bill of not more than $.75 per month may be charged and no charge shall be made for rent of meter.—[THE EDITOR.

METHOD FOR INDEXING AND FILING

WILLIAMSPORT, PA., August 2, 1901.

Editor MUNICIPAL JOURNAL AND ENGINEER:

The only suggestion I might make which would be of interest to other city clerks is found in my system for caring for "Resolutions and Ordinances."

I have a register showing number and title of ordinances, date of introduction in either branch of Councils, and when approved by the executive. All my ordinances, when passed and engrossed, are bound with a wrapper, bearing on its face the number, title, dates of passage and approval and "letter" of record book with page number where ordinance is officially recorded.

My printed copies of ordinances are filed in a pigeon hole case, my register showing number of each pigeon hole that printed copies of the ordinances are filed in, so that any citizen who wants a copy of an ordinance can get it instantly.

My resolutions are bound and indexed in the same manner, but no printed copies are made or preserved, there being no demand for copies of resolutions. The originals are simply filed in numerical order, where immediate reference can be made to them in my vaults.

Another system I introduced here was a binder, showing by card dividers, ordinances as they appear on first, second and third readings with the calendar of the council business in advance of the ordinances. This gives every member the business of the meeting in the order it will come and prevents any confusion or delay.

I have filing cases for every committee of Councils, so that each committee, when it meets—I acting as clerk to all of them—has its business ready for action, which facilitates the work.

I am an extreme believer in system and have my office thoroughly systematized, which is a satisfaction to myself and a benefit to Councils, city officials and the public.

THEODORE CORNMAN, *City Clerk.*

ONE TROUBLE WITH MUNICIPAL POLITICS

BINGHAMTON, N. Y., August 14, 1901.

Editor MUNICIPAL JOURNAL AND ENGINEER:

I was pleased to read your article in last month's issue on "Municipal Intelligence." I think you are on the right track, for one could not expect a council or city to be better than the men governing it. So long as our best men hold aloof from ward politics, I do not see but that they will have to put up with the inferior article. We are having an experience along that line at present, trying to find some one to run for alderman. Those who are wanted claim they are too busy to accept the responsibility, while those who are not wanted are too willing to shoulder the cares of office.

H. H. WOODBURN, *Alderman.*

The experience of Binghamton is common with the majority of American cities, and different methods have been adopted to correct the evil. Chicago, Ill., and Montreal, Canada, have used practically the same methods, that of appealing directly to the voters in each ward through a strong organization and persistent canvass and, at the same time, assuring candidates of continued support. By these tactics good men have been induced to accept aldermanic nominations and they have been elected. Some months ago the Municipal League of Scranton cleaned out a corrupt Council by a vigorous reform with appeals to the courts. While this method was successful, and, therefore, to be commended, yet it failed to arouse public sentiment among all classes in the several wards and so secure the support of the majority at the polls. As a consequence, bad conditions are liable to occur again in the near future. The root of the evil is to be found in ward politics. Here is where all the people should be induced to take a hand in municipal government and thus insure the selection of a representative who would conserve the interests of all classes.—[THE EDITOR.

PERSONALITIES

—A systematic campaign to secure the nomination for governor, on the Democratic ticket, of Mayor J. J. Hartenbower has been inaugurated in Des Moines, Ia.

—The former engineer of the city filtration plant at Pittsburg, Pa., Mr. W. F. Miller, has been appointed as assistant to the county road engineer, Mr. F. W. Patterson.

—Mr. William Allen Veach is the secretary of the Central States Water Works Association, which is to hold its fifth annual convention at Evansville, Ind., on the 1st to the 3d of October.

—Charles F. Lauer is again superintendent of the Columbus, O., Fire Department. The civil service commission has restored him to the position from which he was removed by Director Philbrick.

—Mr. James Johnston, the Comptroller of Rochester, N. Y., has written an article for *The Bookkeeper,* showing the system of accounting used in Rochester, which involves the use of five different banks.

—Mr. R. B. Olney has resigned the position of Engineer of Sewerage of Charleston, S. C., to take a situation with the American Pipe Company of Philadelphia, Pa. Mr. John Gladden, Jr., will succeed him.

—The town of Washington, Mass., is to place the picture of William C. Whitney in the centre of the town seal. Mr. Whitney owns over one-third of the town, the land being included in his mountain game preserve.

—Chicago has been fortunate in securing the services of Mr. R. H. Warder as superintendent of Lincoln Park. Mr. Warder was formerly superintendent of the parks of Cincinnati and is one of the foremost landscape gardeners in the country.

—The names that the Citizens' Union Executive Committee of New York have decided to recommend for nomination for mayor are Seth Low, George L. Rives, F. Norton Goddard, John DeWitt Warner, George F. Peabody and Bird S. Coler.

—Miss Jane Addams, of Hull House, Chicago, has consented to ride at the head of the unions of women workers in the city during the Labor Day parade. Because of Miss Addams' international reputation the number of women in line will probably be very large.

—The Hon. John D. Long, Secretary of the Navy, has presented the town of Buckfield, Me., with a public library in memory of his father. It will be known as the Zadoc Long Memorial Library and was built and filled with books by Mr. Long before he transferred the deed to the Board of Trustees.

—Ex-Mayor Henry Johnston, of Washington, N. J., has been fined $1 and costs for twice having uttered the word "damn" on the street. Justice of the Peace W. G. Creveling, who imposed the fine, also delivered a severe lecture to the culprit. Other offenders that subsequently have been brought before the same justice have succeeded in obtaining their discharge.

—Mr. C. Barber, president of the Diamond Match Company, is preparing to confer two benefits on the town of Barberton, O., which he founded ten years ago. He will donate two hundred acres, largely natural woodland, for a park and will spend many thousands of dollars in improving the land. Mr. Barber will erect a $250,000 mansion in the midst of a park of one hundred and fifty acres and, at his death, this will be left to the town for a hospital.

—Commissioner Moreland, Superintendent of Public Works of the city of Detroit, Mich., has done for his city what Colonel Waring did for New York. Despite ridicule by press and public he accomplished more for the city than any of the three men whose work he now attends to alone. He inaugurated the "White Wings" system, now so much praised; the little barrels placed at over a hundred corners in the city were his idea, and the immense amount of litter that is taken from them every week would otherwise be tossed into the streets. He had the blue enamel signs placed about the city with the warning "Don't Spit on the Sidewalk." Vitrified brick was placed in the unhealthful cobble-stone alleys of the past. Besides these outside projects, the regular work of the department, of which he is the head, through his untiring energy, has been performed in a way that should be a model for others in similar positions.

CONVENTION DATES

SEPTEMBER

The Municipal Electricians will hold their meeting at Niagara Falls, September 2-4.

The Milwaukee Industrial Exposition will be held at Milwaukee, Wis., September 7-28. A. C. Class, 419 Broadway, Milwaukee, Wis.

The New Jersey State Firemen's Association convenes September 9.

The American Cemetery Superintendents' Association will meet at Pittsburg, Pa., September 10-12. David Wood, Homewood Cemetery, Pittsburg, Pa.

New Jersey State Firemen's Association holds its annual convention at Atlantic City, N. J., September 11. H. N. Brown, secretary, 407 Planek, Newark, N. J.

International Good Roads Congress, Buffalo, N. Y., September 16-21.

The American Public Health Association will hold its twenty-ninth annual meeting at Buffalo, N. Y., September 16-20. Dr. C. O. Probst, secretary, Columbus, O.

The National Dairy and Food Commissioners' Convention, Buffalo, N. Y., September 17-19. J. B. Noble, Hartford, Conn.

American Boiler Makers' Association, Buffalo, N. Y., September 17-19. J. D. Faresay, Forest street, Cleveland, Ohio.

State Side Path Association, Buffalo, N. Y., September 20. J. E. Fisher, 75 W. Chippewa street, Buffalo, N. Y.

Bridge and Structural Ironworkers' Convention will be held at Boston, Mass., September 23-28. James Kelly, New York City.

The Northwest Fire Underwriters' Association, Chicago, Ill., September 25-26. D. S. Wagner, 155 La Salle street, Chicago, Ill.

The Virginia State Firemen's Association meets at Staunton, Va., September 25-26.

Massachusetts Firemen's State Convention, Holyoke, Mass., September 25-27. D. A. Burt, secretary, 40 Water street, Boston.

The Canadian Society of Civil Engineers. Buffalo, N. Y., September 26-28.

State Firemen's Association will hold a convention at Portsmouth, N. H., September 27. F. M. Frisselle, secretary, Manchester.

Exposition, Pittsburg, Pa., September 4-October 19.

Charities and Corrections, Canadian Conference, Toronto, Ontario, September 25-27. Dr. A. M. Roseburg, Confederate Building, Toronto, Ont.

The Glasgow Engineering Congress, Glasgow, Scotland, will be held in September.

OCTOBER

The International Cremation Congress meets in Buffalo, N. Y., October 1-3.

The Central States Water Works Association holds its fifth annual convention at Evansville, Indiana, October 1-3.

The American Society of Municipal Improvement meets at Niagara Falls, N. Y., October 1 to 4. D. L. Fulton, Allegheny, Pa., secretary.

Pennsylvania State Firemen's Convention and Tournament will be held at Philadelphia, October 1-4.

Colorado Municipal League will hold its convention at Colorado Springs in October.

American Institute of Architects, Buffalo, N. Y., October 3-5. Glen Brown, 918 F street, N. W., Washington, D. C.

American Street Railway Association will meet in New York City, N. Y., October 9-11. T. C. Pennington, 2020 State street, Chicago, Ill.

Reunion Street Railway Accountants' Association, New York City, N. Y., October 9-11. W. B. Crockurey, Box 630, New Orleans, La.

American Gas Light Association, Boston, Mass., October 16-18. A. E. Forstall, 58 William street, New York City.

NOVEMBER

National Prison Association, Kansas City, Mo., November 9-13. Rev. J. L. Milligan, Allegheny, Pa.

THE FIFTH ANNUAL MEETING OF THE LEAGUE

About two hundred delegates, with their friends, attended the fifth annual meeting of the League of American Municipalities at Jamestown, N. Y., August 21 to 24. Fifty-six cities were represented. The delegates were welcomed to the Empire State by the Hon. S. Fred. Nixon, speaker of the New York State Assembly, who suggested that hereafter the members of the committees on cities in the various State legislatures be invited to attend the sessions of the league and that the constitution be changed so as to admit them to the full privileges of the organization.

Mayor J. Emil Johnson, of Jamestown, in a cordial and graceful manner welcomed the guests to his city. President Johnson responded to these words of welcome from the State and city, on behalf of the league, and then reviewed the work for the past year. He suggested that it would be wise to make all ex-municipal officials eligible to membership, inasmuch as many retained a lively public spirit even though they had no office, and, therefore, would add strength to the league.

The reports of Secretary MacVicar and Treasurer Thomas P. Taylor were most encouraging. At the close of the session, last year, the affairs of the organization were in an almost hopeless financial tangle which threatened its future existence. These gentlemen have worked with untiring and patriotic energy, neither receiving any compensation for their labor, during the year to bring about a better state of affairs. The result has been most gratifying, and for the first time there is a balance to the credit of the league. The prospects for the coming year are exceedingly bright.

Many of the older members of the league have realized for a long while that standing committees, whose work would be directed along certain lines, should be appointed. For this reason and for the purpose of extending the influence of the organization a resolution was introduced and passed without a dissenting vote, which authorized the appointment of four committees: one on taxation, one on franchises, one on uniform municipal accounting and one on the management of public service industries. The work of the committees will extend through the year and reports will be made at the next convention.

Much to the credit of the organization, Secretary MacVicar and Treasurer Taylor were re-elected without opposition. The other officers were chosen as follows: President, Charles S. Ashley, Mayor of New Bedford, Mass.; first vice-president, J. Adger Smyth, Mayor of Charleston, S. C.; second vice-president, Richard J. Barr, Mayor of Joliet, Ill.; third vice-president, James M. Head, Mayor of Nashville, Tenn.; trustees, Thomas G. Hayes, Mayor of Baltimore; John Arbuthnot, Mayor of Winnipeg, Manitoba, Canada; E. S. Parkhurst, Mayor of Gloversville, N. Y.; P. H. Cummins, Alderman of Fargo, N. D., and Alexander Harbison, Mayor of Hartford, Conn.

The entertainment afforded by the officials and citizens of Jamestown was all that could be desired. A fitting climax to the convention was the ride upon the famous Chautauqua Lake, a visit to the Assembly grounds and evening at the theatre at Celoron, which occurred on Friday, the closing day. Although the clouds were threatening, the enjoyment of the occasion was not marred in the least.

There was a good natured struggle between Grand Rapids and Colorado Springs to secure the next convention. Mayor J. R. Robinson, of the latter city, made a strong and convincing plea for the holding of the next meeting in his city. It was so well put that it came near winning. Mayor George R. Perry, in a clear, short and clean cut speech presented the claims of his city. When the vote was counted it stood sixteen to twelve in favor of Grand Rapids. On motion of Mayor Robinson, who accepted his defeat gracefully, the choice was made unanimous. Mayor Perry pledged himself to assist in making the next convention the largest ever held.

AMERICAN SOCIETY OF MUNICIPAL IMPROVEMENTS

The eighth annual convention of the American Society of Municipal Improvements will be held at Niagara Falls, N. Y., October 1 to 4, inclusive. The programme for this meeting is in course of preparation, but the following subjects have already been provided and will be presented by the individuals named, which afford sufficient assurance that the session will be a profitable one.

Mr. B. T. Wheeler, Superintendent of Streets of Boston, will present a paper upon "Recent Experience with Wood Pavements." F. A. Kummer, C. E., Jr. Mem. Am. S. C. E., will also write upon this topic, his subject being, "Wooden Pavements at Home and Abroad."

"Pavement Guarantees" will be ably discussed by George W. Tillson, C. E., Engineer Bureau of Highways, Brooklyn.

For some months past the city of Chicago has been experimenting with its garbage destruction, hoping to evolve a system by which steam could be produced by garbage incineration. The work has been under the supervision of Edward B. Ellicott, City Electrician, who will present a paper entitled, "Utilization of Garbage in Production of Steam."

Madison, Wis., has been evolving useful experience and information in the treatment of sewage, which will not fail to interest the majority of cities throughout the United States and Canada. F. E. Turneare, C. E., City Engineer, of Madison, will present this subject, "The New Sewerage Purification Plant at Madison."

Marshall O. Leighton, Health Inspector, Montclair, N. J., will tell of the "Engineering Phases of Work of the Municipal Board of Health." This is one of the neglected municipal fields, and any light, in the way of experience, which Mr. Leighton may throw upon the subject, will be sure of a warm welcome. Mr. Olin H. Landreth, of the New York State Department of Health, Schenectady, N. Y., will deal with another phase of this subject: "State Legislation and Municipal Sanitation."

Water meters always afford an interesting subject for discussion, but Mr. M. N. Baker, associate editor of *Engineering News*, will introduce the meter in a new light and speak of "The Water Meter as a Sanitary Agent."

For a number of years this organization has kept a series of standing committees at work upon some fruitful theme and their annual reports are always anticipated with the keenest interest. Among reports expected at the next session are: "Taxation," by August Hermann, President of Water Works Commission, Cincinnati; "Disposition of Garbage," by John Jones, Street Commissioner of Toronto; "Municipal Data," by Charles Carroll Brown, C. E., editor *Municipal Engineering*, Indianapolis, Ind.

This society was the first to enter the municipal field as representing the practical life of American municipalities. Its growth has not been phenomenally large, but slow and sure. Its usefulness has never been questioned nor has it been criticised as a "junketing" scheme. That its labor has been profitable, not only to its membership attending the annual gatherings as well as the large majority of cities not included in its membership, is sufficiently attested by its published annual proceedings, which form a volume of liberal proportions worthy of a place on the shelves of every public and municipal library as a work of reference.

Every city in the United States and Canada would undoubtedly find it helpful in the largest degree to become a member of this society. That it is a short-sighted policy to hold aloof from such an organization is putting the case lightly. It is a positive detriment to any city not to embrace all opportunities of this kind for adding to its knowledge of civic affairs from the practical standpoint. If it were an organization which dealt with the theoretical side of the question then there might be some excuse for hesitating about expending the amount for the annual membership fee and the expenses of the city's delegates, but so long as it adheres to its present policy and continues to deal with the practical experience of its membership, there can be no reasonable excuse for not joining its ranks. A letter addressed to Mr. D. L. Fulton, secretary, Allegheny, Pa., will bring all the desired information in regard to membership and privileges.

ODD THINGS RELATING TO MUNICIPALITIES

Municipal Nurses—Facetious Policeman—Philadelphia Woman Routs City Officials—Child Desertion Epidemic—Suburb of San Francisco Composed of Abandoned Street Cars—Beaumont's Lucky Councilmen

FACETIOUS POLICEMAN.—"Take that dog off the street or I'll run you in," ordered the conscientious Chicago policeman the other day. "But, why?" asked the owner of the dog; "he has a license on." "That's all right as far as it goes, but that's a spitz dog, and we have strict orders to enforce the anti-expectoration ordinance," replied the policeman.

* * *

CHILD DESERTION EPIDEMIC.—The city of Birkenhead, England, is suffering from an epidemic of child desertion. For the past three or four months the number of infants and small children that have been deserted by absconding parents has more than doubled the number for the corresponding period of last year. It has so increased the rates, or taxes, that a reward of £2 has been offered for the apprehension and conviction of all offenders.

* * *

COUNCILMEN ON "JUNKET" AT OWN EXPENSE.—The Town Councilmen of Beaument, Texas, were recently made immensely wealthy by the discoveries in oil, as that town happened to be the centre of a rich strike. In consequence a majority of the body have gone to the mountains or to the seashore to have a good time so that it is impossible to hold a meeting of the Council as there are not enough members in town to form a quorum. This is a "junket" which pays its own way and yet the city finds fault.

* * *

CITY CLERK FOR FORTY YEARS.—There are not many men who have given forty years of their lives in continuous service to their cities. Galena, Ill., has such a man—John B. French—and has just re-elected him to the office of City Clerk. Mr. French began his service as city clerk at forty years of age, which makes him eighty years of age now. His father was city clerk for several years before him, so that this office has been in the same family for about a half a century.

* * *

MUNICIPAL NURSES.—The medical officer of health for Croydon, England, recently presented his first annual report, in which he pointed out that the death-rate among infants was very excessive, amounting to 132 per 1,000, and proceeded to say: "It would be no exaggeration to assert that at least one-half of the deaths were preventable." The city council, at the suggestion of the officer, has appointed municipal nurses, to instruct parents in infant feeding and management and as to the precautions to be taken in the case of measles, whooping-cough, and other children's complaints.

* * *

THE LAMENT OF THE MODERN HOUSEKEEPER.—The microbe and the bacillus have it all their own way these days. They have attacked and routed every branch of society and now have concentrated their efforts upon the housekeeper, who has already had too many troubles. The latest office to be created in municipal circles is that of the "Civic Microbe Inspector" in an English town, whose duties require a thorough examination of suspected houses. In sheer desperation the housekeeper has put up the lament:

"We have boiled the hydrant water,
We have sterilized the milk,
We have strained the prowling microbe
Through the finest kind of silk,
We have bought and we have borrowed
Every patent health device,
And at last the doctors tell us
That we've got to boil the ice."

* * *

WOMAN WITH GUN HALTS CITY WORK.—A lone woman in Philadelphia, a few days ago, successfully routed three attacks upon her cabbage and potato patch which was made by contractors, engineers and finally the police of the Quaker City. The woman in question has a small house and patch of ground located on a plot purchased several months ago by the city for use in the erection of its immense filtration plant now under construction. She was given notice to leave last March, but on consulting her attorney, who had found some technical error in the filing of the bond of the contractors who were to do the work for the city, she was advised not to move. She cleaned the old shotgun, which had belonged to her departed husband, laid in a supply of ammunition and prepared for a siege. The old woman was not disturbed until a few days ago, as it had not been necessary to operate on her land up to that period. First, the contractors started to plan their work, but were met at the fence by the lone widow with shotgun in her hand. Despite their expostulations she held her ground and asserted her right to fill the first man with buckshot who trespassed on her land. They gave up beaten, only to be followed in turn by a squad of engineers and later by a squad of police. They all saw that she meant business and finally consulted with her lawyer, whose name she gave, when they agreed he was right. The widow has notified the authorities that they can have possession as soon as she has dug her potatoes and made her sauerkraut.

CARTOWN

THERE is a little settlement just outside the city of San Francisco where the large majority of the structures were once street cars. It is located at the ocean beach, the shore end of Golden Gate Park. There are perhaps fifty of these car dwellings in the little settlement, many of them fitted out with considerable elegance and numerous conveniences. They are arranged upon the general plan affording their occupants the widest views, all fronting the sea. Streets intersect, at right angles, and plank walks are laid so as to give pedestrians access to their homes without wading through the deep sands. Few of these cars have been adorned with a coat of paint. The exteriors are generally intact, and the conspicuous signs denoting the route over which the cars once perambulated are not obliterated.

Some methods are used in the adornment of these curious resorts. Many of these are covered with vines, most have galleries extending around the front and sides. The roofs of some are arranged as lookouts and awnings drop over the windows. There is considerable space for storage below the cars, while other cars acquire additional room by little extensions. In some instances one car is raised above another, and sometimes the cars are laid upon other buildings, thus giving an extra story. The platforms of the cars are often transformed into balconies and bay windows with the aid of the carpenter and glass fitter, and afford points of observation protected from the cold winds, besides giving extended views of sea and land.

The arrangement of the interiors of the dwellings is highly ingenious, the necessities of the case requiring the utmost economy of space, the average sleeping car suggesting a model. Half a dozen persons have been at night accommodated with lodgings in one of them. Ventilation is always assured.

While there are many families permanently residents of "Cartown," the larger number occupy the "vehicles" as others do the house boat, giving opportunities for original methods of entertainment and diversion for themselves and friends. Confined and restricted as these dwellings are, there is compensation in the fresh ocean breezes which here blow right from the sea, besides the enjoyment of a health-giving environment. History and romance have been ransacked in providing names for these "carvillas" suitable to the facetious idiosyncracies of their various owners. In "Cartown" the "Villa Miramar" and "Chateau Navarre" adjoin the modest restaurant and more conspicuous bar.

There are many kinds of trades pursued in this odd settlement, restaurants and bars being most numerous.—*Scientific American.*

CURRENT NEWS AND PRACTICE AMONG THE CITIES

Trailing Skirts Condemned—Richest Town in the World—Indoor Playgrounds—Women on Police Force—To Fumigate Trolley Cars—Concrete Sidewalks—Library Statistics

PUBLIC BATHS IN JAPAN.—Public baths are features of every Japanese town. There are 800 in Tokio, which are patronized by 300,000 people daily. The price charged is about a cent for grown persons and less for children.

TO FUMIGATE TROLLEY CARS.—The Hudson County (N. J.) Board of Health has decided to fumigate every trolley car within the limits of the county, as a precautionary measure against an outbreak of smallpox next winter.

A NEW CITY JAIL is now under construction for Norfolk, Va. When completed it will contain 144 cells, including dungeons. There will be separate divisions for white and black and for the sexes. A modern hospital will be one of its features.

PETROLEUM TO LAY DUST.—Walter L. Suydam, a contractor of Sayville, L. I., it has been reported, is using petroleum to settle the dust in the roads of that village. He has found that one sprinkling of the roads keeps them in good condition for several months.

AMBULANCES TO GO SLOWER.—The authorities of Washington, D. C., have decreed that ambulances shall not travel faster than twelve miles an hour. The order was brought about by the complaint of a citizen that the noise of the gongs disturbed him unduly.

RICHEST TOWN IN THE WORLD.—Brookline, Mass., is said to be the richest town in the world, for its size. With a population of 19,935 it has a total valuation of $83,130,700, of which $26,871,000 is personal and $56,309,700 is real. Buildings in the town are valued at $23,205,000.

TRAILING SKIRTS CONDEMNED.—The excitement about tuberculosis, following the congress recently held upon that subject, has led to the condemnation of the trailing skirts of English women. It has long been claimed that the bacilli of consumption often found in the street dust are taken by that means into the houses there to infect their inmates with the deadly disease.

TRACK ELEVATION IS PROPOSED in the city of Cincinnati. The plan submitted to the authorities involves the expenditure of about $630,000, of which the Pennsylvania offers to pay 65 per cent., if the city will pay the balance. Where the street railway is concerned the railroad people think it should be asked to pay but 40 per cent., the city 35 per cent., and the street railway 25 per cent.

THE MOST RAPID GAIN IN POPULATION shown by any American city is that of Los Angeles. This early California town, settled by the Spaniards in 1780, incorporated as a city in 1850—one year after the discovery of gold—gained 350 per cent. in population between 1880 and 1890, and 100 per cent. between 1890 and 1900. Its present population is 102,479. It has an area of over 30,000 acres, including a park of 3,000 acres.

SIGN LICENSES UNCOLLECTED.—Some time ago the city of Oakland, Cal., passed an ordinance which required the payment of a license fee for the maintenance of all signs in front of places of business. At the end of the first thirty days after the law went into effect only about 5 per cent. of the 7,000 or 8,000 sign owners had paid the fee. The officials seem to fear the enforcement of the law, but some of the owners are anxious to be made the victims of a test case.

A NEW VOTING MACHINE.—A Milwaukee man has invented a voting machine which uses the ordinary ballots. As the paper passes through the machine the voter indicates the candidates for whom he desires to vote and his choice is recorded. When the polls are closed the index to the machine shows just how many votes each candidate has received, and this record can be corroborated by the ballots which have been preserved as marked.

WOMEN AS POLICEMEN.—In the near future Washington is likely to have a few women serving on the police force. Some time ago the Humane Society applied to the Commissioners for the appointment of women on the metropolitan police force to represent the society in preventing cruelty to animals. At first there was thought to be a legal objection in the way, but investigation has revealed the fact that they can be appointed as "extra privates."

POPULATION OF CANADIAN CITIES.—The total population of Canada is, according to the recent census, 5,338,833. In spite of five years of unparalleled prosperity Canada's increased population is but half a million. Montreal, the Canadian metropolis, has a population of 266,826; Toronto comes next with 207,971; Quebec, 68,834; Ottawa, 59,902; Hamilton, 52,550; Winnipeg, 42,336. There are only eighteen places in Canada with a population of more than 10,000 persons.

ELECTRIC CONDUITS IN STREETS.—A recent Rochester report, issued by City Engineer Fisher, shows that there are three companies operating conduits in that city: Gas and Electric Company, Bell Telephone Company, and the Western Union Company, having a total mileage of 51.89 miles. The operation of these conduits by private companies has proven unsatisfactory, and there is a strong movement under way, headed by Mayor Carnahan, to have the ownership pass to the city.

TWO INDOOR PLAYGROUNDS were recently opened in New York City in the first model tenement house constructed according to the new tenement house law of New York State. The playgrounds are in the basement on the sunny side of the house and are about thirty feet long by twenty broad. The floor is of cement and the walls bear a coat of bright red paint. They will eventually be hung with pictures designed to appeal to youthful eyes. A small library will be started later. They will be for the exclusive use of the 200 children in the block.

FREE EMPLOYMENT OFFICES.—The State of Illinois established three free employment offices in the city of Chicago on August 2, 1899, and a third at Peoria, July 1, 1901. During the twelve months ending July 27, 1901, there have been filed in the Chicago offices 14,566 applications from men for employment and 14,066 applications for help. Of these 12,529 secured employment, but there were 1,537 who asked for help who could find no one who was satisfactory. Of the 11,662 women who applied for positions 10,832 secured them, and there were 2,296 positions unfilled.

SUCCESSFUL GARBAGE PLANT.—Minneapolis has been discussing the garbage question for several years, and about a year ago selected the system which was to be installed for the handling of the city's garbage. The contract was finally awarded for the construction of a Decarie incinerator, which is manufactured in Montreal, Canada. The plant was tested the other day to the entire satisfaction of the city authorities. One of the incinerators burned twenty-five tons of garbage in twelve hours without the use of any other fuel than the garbage itself, so a news dispatch reports.

THE "CLEAN CITY CLUB" OF CHICAGO.—Miss Gertrude Howe, who is at the head of club work in Hull House, Chicago, has just organized a new club, known as "The Clean City Club." Its membership is mostly composed of children, and of the 300 already in membership Miss Howe knows everyone by name. Each member of the club is pledged to pick up and destroy at least one piece of waste paper during each day, and during one month 150,000 pieces of waste paper were thus taken care of in a space of twenty-two blocks by 120 children. For each block and the children living in it is appointed a chairman and a sub-committee.

LIBRARY STATISTICS.—There are at the present time 5,383 public, society, and school libraries in the United States having 1,000 volumes or more. This is an increase of 1,357 libraries since the beginning of 1896. These 5,383 libraries contain no less than 44,591,851 books, an increase of more than 11,500,000 volumes in five years, or nearly 35 per cent. There is one library for every 14,118 inhabitants of the United States. In 1891 there were forty-one volumes to every 100 of the population; in 1896 the number had increased to

forty-seven, while in 1900 it had grown to fifty-nine volumes. The general libraries number 1,979; there are 1,725 school and 689 college libraries. That these institutions are largely patronized is shown by the fact that during the year ending July 1, 1901, 2,405 libraries issued for home use 48,410,128 volumes.

NAMES FOR NEW YORK'S BRIDGES.—The American Scenic and Historic Society, of which Andrew H. Green is president and Edward Hagaman Hall, secretary, has awarded prizes for the most appropriate names suggested for the four bridges of New York; that is, the old Brooklyn Bridge, the Delancey street bridge, which is almost completed, and the bridges at the foot of Pike street and across Blackwell's Island, the preliminary work of which is now under way.

The first prize—a silver copy of the medal commemorating the consolidation of Greater New York or a golden double eagle or $20 worth of books—was awarded to Miss Mary I. Smithson, of East Orange, N. J., who proposed the following names: Brooklyn, Manhattan, York and Queens. Franklin T. Nevin, of Pittsburg, Pa., captured the second prize by suggesting the names Brooklyn, East River, Manhattan and Queens.

CONCRETE SIDEWALKS are required in Wheaton, Ill., under an ordinance recently passed. This provides that the ground shall be excavated to form a sub-grade thirteen inches below the pavement level, the surface to be compacted and then covered with ten inches of clean gravel or cinders. Upon this bed will be laid a three-inch course of concrete, composed of one part Portland cement, two parts sand and (after the cement and sand have been mixed dry) five parts broken stone not exceeding two and a half inches in greatest dimensions. Clean water will then be added in sufficient quantity to give a surplus of moisture when rammed. Upon this will be a finishing coat composed of one part imported Portland cement and one part torpedo gravel. The concrete and finishing coat will be laid in alternating sections, five feet in length and five feet apart, the alternate sections to be filled in after the first ones have set. The walks must be at least four feet wide, with a slope toward the curb of one in thirty-six. The ordinance permits the use of sidewalk brick or stone laid on the cinders or gravel instead of concrete. No other construction will be allowed, under penalty.

MUNICIPAL RAILWAYS IN EUROPE

THE Austrian Government railroad has to-day a net mileage of almost 6,300 miles; that of Hungary about 8,150 miles. Since 1882, a great change has taken place in Russia; of the then existing 14,000 miles of railroad, only about forty miles were owned by the Government. The total mileage in 1897 was about 24,300 miles, of which 15,780 miles belonged to the Government. To this must be added the Government railroads in Finland and Asiatic Russia, the Trans-Caspian and the Siberian railroads.

The Servian, Roumanian, and Bulgarian railroads are owned exclusively by the respective Governments.

Of the northern European kingdoms, Denmark has a Government railroad system of 1,167 miles and 525 miles of private railroads.

Norway's railroads belong almost exclusively to the Government.

Sweden has 2,303 miles of Government and 4,387 miles of private railroads. The Government has not yet succeeded in acquiring the latter, although efforts have been made to do so.

Belgium, in 1898, through the purchase of the Grand Central Belge and some minor private roads, became the possessor of the whole Belgian railroad system.

Holland acquired all the remaining private railroads in 1890; they are, however, operated by two private companies.

The Italian Government purchased all private main railroads of Italy in 1885 and leased them for twenty years to private corporations.

Switzerland, after long discussion, resolved by federal law in October, 1897, to gradually purchase all the private railroads. On January 1, 1901, the first federal railroads were operated by the Government.

By agreements of 1883, the six large French private railroads had their rights recognized by the Government, and no change has been made in the policy in that country. The relatively small Government railroad system, located between the Orleans and the Western railroads, has remained intact. As the private railroads, however, have received large subsidies from the Government, and as they will revert to the State in the second half of the present century, they can hardly be considered purely private railroads.

Of the countries which have a private railroad system exclusively, only England and the United States remain, and the writer remarks that it would not seem that this condition will soon be changed. He adds that it would be difficult to prove that the railroads of these two countries show more efficiency than the continental ones. To an American traveling in Europe, however, it is apparent that as far as comfort and convenience are concerned, the American railroads are far in the lead, and the English come next.

AN EXTRAORDINARY SUSPENSION BRIDGE

By H. C. Tyrrell, C. E.*

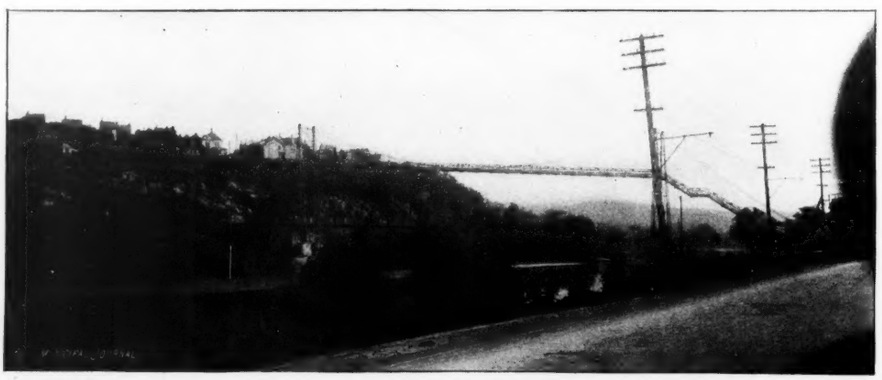
THE accompanying photographs illustrate a suspension foot bridge just completed at Easton, Pa. It is remarkable in several ways. In the first place, it is built with three towers, thus forming two main river spans instead of one, as is usually the case with suspension bridges. And it is also extraordinary on account of the great difference in elevation of the two ends, which amounts to ninety feet. To overcome this difference in elevation, the floor is run down on a 7 per cent. grade from the north bank to the river tower. From this point to the low end are four runs of stairs, the whole being suspended from the cables.

The bridge crosses the Lehigh river, the Lehigh Coal and Navigation Company's canal, and four tracks of the Lehigh Valley Railway. Its total length is 804 feet. It contains two river spans of 279 feet each, and a stair span of 110 feet.

On account of having only a 10-foot roadway, which is small in proportion to its length, it was necessary to resist wind pressure by running guy ropes from the centre of the two main spans to shore.

As will be seen from the illustrations, the bridge has steel towers, resting on stone piers, which are built up to extreme high water level. The height of the centre tower, from low water to top of saddle, is 108 feet. It has two steel wire cables, two and three-eighths inches diameter each, and three-quarter-inch suspenders. The steel stiffening trusses are five feet three inches deep. They are braced laterally at panel points to the floor beams. It has wood joist, plank floor, and wood hand rail.

* Designer, Boston, Mass.



VIEW SHOWING 804-FOOT SUSPENSION BRIDGE AT EASTON, PA

279-FOOT SPAN OF SUSPENSION BRIDGE AT EASTON, PA

The placing of the masonry anchors on the low side gave considerable trouble, as the water soaked through the loose material from the river.

It is a toll bridge, owned and operated by a local company. In the autumn of 1899 the owners advertised for plans and estimates, and the design shown herewith was accepted. The City Engineer of Easton had charge of building the foundation.

METHODS OF GARBAGE DISPOSAL

In July we received a letter from Johnstown, Pa., asking for data in regard to the methods pursued by cities in disposing of their garbage. The first result of our inquiries in the matter was given in the August issue, but as more reports on the same subject have been received, we take pleasure in publishing them.

Easton, Pa.—Anyone can collect garbage from the householders, and the city has a boat that takes it down the river.

Allentown, Pa.—The citizens remove their ashes and rubbish at their own expense, but under certain regulations. Garbage is removed under contract at $3,000 per year in sanitary carts and distributed for manure purposes on land near the city. A crematory will soon be erected.

Orange, N. J.—Ashes and rubbish are disposed of by contract. Garbage is similarly treated, but a crematory is being considered.

Nashua, N. H.—The city teams collect the refuse. Garbage costs $1,037.50 to collect, and is used at the city farm. Ashes and rubbish cost $3,763.09 for collecting and are dumped outside the city limits, the paper being burned at the dump.

Pittsfield, Mass.—Licenses are granted to scavengers, who are paid by the householders.

Wilmington, N. C.—The garbage is collected in carts by the city and dumped outside the town.

Akron, O.—A private company collects the ashes, rubbish and garbage in galvanized iron cans at a cost of fifteen cents per can each week. Ashes and clean rubbish are used for filling and the rest is burned.

Utica, N. Y.—The collection of ashes, rubbish and garbage is by contract. Ashes and rubbish cost $528 per month, and garbage $825. Ashes are used to fill and the garbage is cremated at a yearly cost of $6,000.

Newport, Ky.—The city collects the ashes and garbage at a cost of $3,200 per year. Steel carts are used and the garbage is dumped into the Ohio River from a float. Ashes are dumped in vacant land.

Malden, Mass.—The Board of Health collects the garbage and ashes; the latter are used for filling and the former is sold.

Chelsea, Mass.—The ashes are spread upon the low lands for the making of contemplated streets. Garbage is removed by the contractor for his use and disposal.

Montgomery, Ala.—The city employs sixteen men and nine wagons for the removal of ashes, rubbish and garbage at a cost of about $7,381 per annum. Ashes and dry rubbish are used for filling. Garbage, vegetable matter, etc., are carted away and buried under supervision of the sanitary inspector.

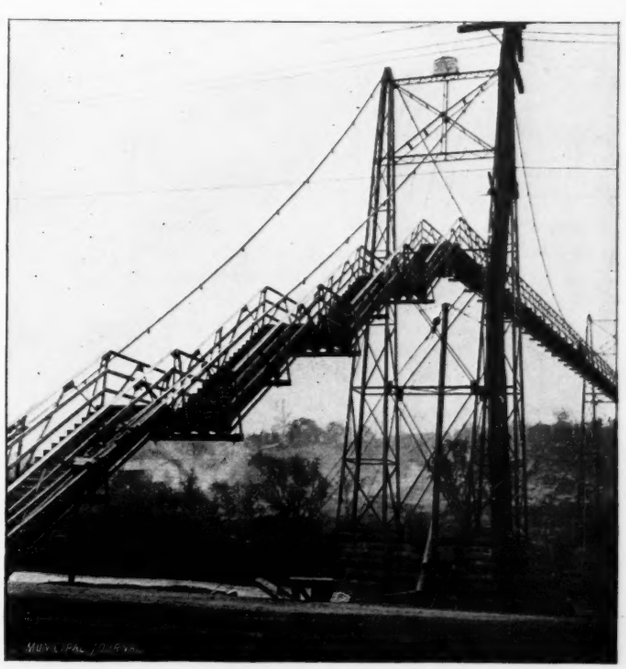
Mobile, Ala.—All waste matter is collected by the city in carts, daily as a rule, and carted to dumping grounds outside the city, where the garbage is covered with sawdust.

Quincy, Mass.—No collection is made of ashes and garbage by the city, but dumps are maintained by the health board, where citizens can dump anything of this nature. Garbage is collected in city carts at a cost of $2,700 a year and sold on contract, the party agreeing to remove it at once on collection.

Yonkers, N. Y.—The Board of Public Works collects the ashes and garbage. Ashes and rubbish are disposed of in the docks on the river front and at other places where not offensive. Garbage is burned at the crematory. It costs $17,125 a year for the collection of ashes and garbage and for the maintenance of the crematory, $3,746.

York, Pa.—The crematory has been abandoned and all matter that would be liable to decompose on the dumps is sold to a local phosphate and chemical works, because it is a cheaper way. The cost of collection is about $3,500 per year, and the company disposes of it at 85 cents a ton. The ashes and rubbish are collected and placed on the dump at a yearly cost of $6,000.

Cedar Rapids, Ia.—Ashes and rubbish are removed by individuals on notice from the health department. If it is not done, the city removes it and charges the expense as a special tax. It takes three teams in summer to traverse four square miles of territory and collect dry garbage and rubbish from the alleys. Wet garbage is placed in cans in the alleys by the householders. The work is contracted for at a cost of $1,850 per year, and the garbage is dumped in the river below the city.



STAIR SPAN OF EASTON, PA., SUSPENSION BRIDGE

Chattanooga, Tenn.—The city contracts for wagons and teams at so much per hour for garbage removal, and it costs $5,643.18 per year. In the crowded parts of the city the garbage is removed daily; in others, once or twice a week. The city is divided into districts, with one wagon to a district. The ashes and garbage are not separated and are hauled to the bank of the Tennessee River and dumped. The contractor keeps hogs on the dump to devour the organic matter, and the animal matter is incinerated in a small furnace there.

Waltham, Mass.—Ashes are collected at a cost of $1,450 per year, or at thirty cents per load; $3,798.18 was spent on the collection of garbage last year. The city does this work itself. When convenient, the ashes are dumped on private land, wherever people want it, for filling. For the benefit of the householders, the rules governing the collection of ashes are printed on a card, of which the accompanying cut is a fac-simile.

OFFICE OF THE

SUPERINTENDENT OF STREETS.

Attention is Called to the Following Order of the Superintendent of Streets.

Ordered:—"That the ashes kept for removal by the Street Department shall be kept in barrels placed on the outside edge of the sidewalk before 7 o'clock A M., of the day of collection. Said barrel not to exceed in size that of a common flour barrel.

The ash cart will be confined **exclusively** to carring off ashes and such rubbish as is naturally found in ashes. Separate collections of **paper,** rags, hay, straw, gravel, etc., **will not** be taken, nor any animal or vegetable matter or substance likely to decompose, as garden rubbish, swill, etc."

Per Order,

R. A. JONES, Sup't of Streets.

Fort Worth, Tex.—All garbage disposal is done privately, individuals arranging as best they can with the several scavengers.

Columbia, S. C.—Garbage is collected by the city and dumped into the river. Ashes and rubbish are used to fill low ground. Eight carts are employed and cost about $10 per week each.

Washington, D. C.—This city has a contract with a company to collect the garbage and dispose of it. The garbage is separated from ashes and rubbish and taken in iron tanks thirty miles by rail to the reduction works. Here it is put under pressure and then allowed to settle in tanks. The oils and fats are sold to soap makers, and the rest is pressed, pulverized and sold as fertilizer.

Augusta, Ga.—Garbage and rubbish must be placed in boxes and barrels on the sidewalks between the hours of 7 p. m. and 8 a. m., Sunday and Saturday afternoons and nights excepted. Scrap paper must be tied in bundles before being placed on the walks. Fines are imposed on all disobeying the ordinances.

Haverhill, Mass.—The ashes and rubbish are collected by the city with the teams of the street department at a cost of $20 a day, and are deposited on the city dump. The garbage is collected by contract at a cost of $2,700 per year. It is collected in tightly closed barrels and is fed to the swine of the contractor.

Pawtucket, R. I.—Garbage is collected by contract, the term being four years. The cost to the city is $3,600 per year. The garbage is fed to pigs on a farm outside the State.

East St. Louis, Ill.—The city collects all ashes, rubbish, etc., in carts and dumps it into low places on unpaved streets.

Muncie, Ind.—The city burns all garbage in the crematory. The garbage is classified into various groups. All rubbish is burned as far as possible on the dump, being collected by the city. The cost of cremating the garbage is 85 cents per ton.

Jackson, Mich.—Garbage is collected in galvanized iron cans twice a week by a company from all who are willing to pay 50 cents a month. Ashes, rubbish and garbage are deposited on low lands.

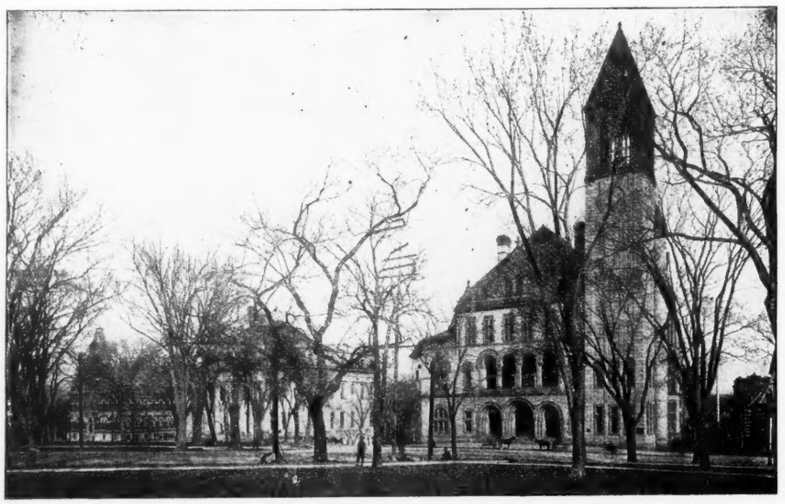
INVITATIONS TO VISIT ALBANY

THE Chamber of Commerce of Albany, N. Y., has undertaken to advertise its city in a manner both unique and successful. It is hard to estimate the amount of good that is bound to come from this effort. The method of inviting people to visit their town, while simple, was certain to cause many to think and talk about Albany. Small circulars were printed setting forth the beauties of the city and giving all the statistics that are of interest to tourists. These are sent to the prospective visitors to the city. Up to July, 1901, 15,000 invitations had been sent, a very large proportion of them being forwarded directly to parties living outside of the State, who intended visiting the Pan-American Exposition. The addresses of these persons were secured through the coöperation of the various chambers of commerce and boards of trade all over the country. The large manufacturing concerns also used these circulars when corresponding with out of town buyers, thus aiding in their distribution.

Two folders are used. Number 1 tells the points of interest about the city, giving all the important data. The accompanying illustration is one of the two used to illustrate this circular. Folder Number 2 is called "How to See the City," and is distributed through the hotels and on the steamboat and railroad lines entering Albany. It contains all the necessary instructions for two tours by trolley and three carriage drives, mentioning all the interesting points to be seen in their regular order.

The Chamber of Commerce gladly arranged for these drives or special tours gratis and has secured several young men to serve as guides and young women, speaking French and German, to act as chaperons to parties desiring them. The guides are paid 25 cents an hour by those wishing their services and, as they must pass a rigid examination regarding the city and its interesting places before being recommended as guides, the visitor can rely upon the accuracy of their statements.

Not only are these circulars well distributed but in connection with this work hangers have been placed in all the hotels and public buildings in Albany and in the steamboats and railroad cars.



THE HIGH SCHOOL THE CITY HALL THE STATE HOUSE, ALBANY, N. Y

It is especially gratifying to the Chamber of Commerce that the chambers of commerce and boards of trade in other cities have so readily co-operated in this work. Over fifty chambers of commerce have written Secretary William B. Jones expressing their appreciation of the thoughtfulness of his board in inviting their members to visit Albany. Newspapers all over the country have commented in the most favorable manner on these invitations.

DRIVEN WELLS FOR FIRE PURPOSES

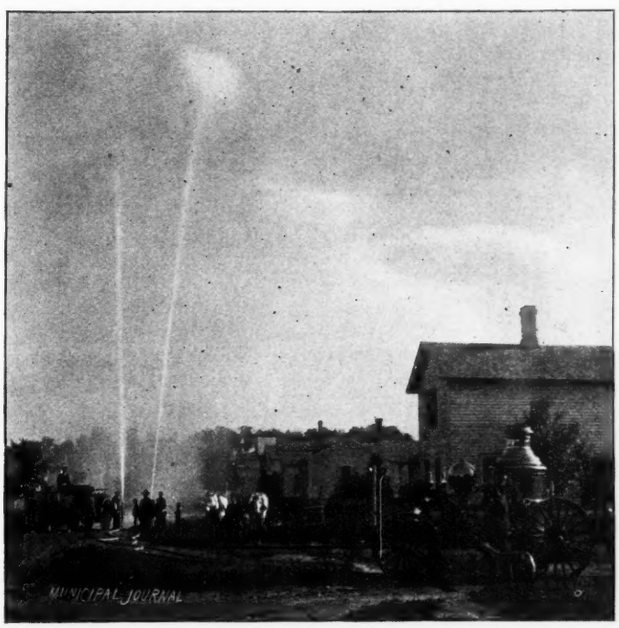
Money Wasted in Cisterns—First Used Twenty Years Ago—Not Patented—How to Construct a Well—Not Expensive—Not Adapted to Every Locality—No Charge for Maintenance

By John C. Spencer*

ONE of the most difficult problems confronting cities and villages of the whole country is an adequate water supply for fire extinguishment. In many places water is easily obtained, especially in those fortunate enough to be located near rivers or canals; but cities are constantly expanding—the fire area following in the wake of expansion—demanding water supply. Small cities and villages are reluctant in the expenditure of large sums of money for water works, and when such expenditure is made, not every street, and not every section of a city or village is fortunate enough to obtain a water main. Hence, other means of water supply must be provided.

MONEY WASTED IN CISTERNS

Cisterns, expensive to construct and maintain, are resorted to, but uniformly prove unsatisfactory, especially in localities remote from a water course, and where the fire department is wholly a volunteer organization—owing to the difficulty and expense of keeping the cisterns filled with water. Municipalities have been experimenting with this water problem for years. In the larger cities, by the sea



FIRE ENGINE THROWING WATER DRAWN FROM DRIVEN WELL

shores and beside the lakes and rivers, cisterns are being abandoned and "dry pipe lines" installed, it being practicably demonstrated that the change is economy so far as fire protection is concerned.

In my own little city thousands of dollars, expended in the construction of fire cisterns remote from the river, has proved money thrown away, as it required too much expense to maintain them in serviceable condition. Water mains do not cover the entire fire area, consequently we are compelled to provide means, outside the reach of the water mains, for fire protection.

FIRST TRIED TWENTY YEARS AGO

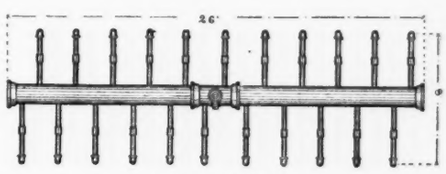
It occurred to me, some twenty years ago, that if a large number of well points were driven in close proximity, the ends brought together into one large pipe at or near the ground surface, so as to permit the attachment of the suction of a fire engine, a sufficient supply of water could be obtained. I was fortunate enough to obtain an appropriation to construct such an experimental well. It was constructed, but it did not prove a success, owing to the fact that the points were not properly covered to prevent the flow of sand, that entered the pipes in sufficient quantity to stop the flow of water. This well, of necessity, was abandoned, but soon after another was constructed, which proved more successful, but lacked a sufficient flow of water, which was owing to the fact that we did not put down enough points—the flow of water was not sufficient to supply a first-class engine running at full capacity. Yet this well appeared to please the authorities, and I was directed to construct another, which I did on more practicable principles. This well proved a success in every detail, and it furnishes an inexhaustible supply of water for fire extinguishment.

HOW TO CONSTRUCT THE WELL

There is no patent on this well; therefore, I will endeavor to explain in detail the construction, that all similarly situated may profit if they so wish. Select a point where the water level is, say, twenty feet below the surface of the ground. Excavate the earth until you reach a point on a level with the water. The excavation must be sufficient to permit a good slope of side and end banks, and at water level be of not less than twenty-eight feet long by fourteen feet wide. All this excavation can be done with scrapers. The banks having a proper slope, there is no danger of sliding in or caving. Procure a sufficient quantity of pine slabs, such as are used for fuel, having the same about four feet long; run them through a saw to straighten the edges, and drive them along the bank at the water line. This will prevent sand and gravel washing from under the bank. By sharpening the points of the slabs they can be easily put down to any required depth, but it is not necessary in this case to drive more than two and a half or three feet. Safe now from in-flow, resume excavation by throwing out two feet of sand and gravel, or whatever formation you find at the water level. This finishes the excavation and you are ready to proceed in the construction of your well.

Then procure two lengths of twelve-inch water pipe and one 12 x 12 x 8 inch T. At equal distances along both sides of this pipe and T drill twenty-four holes and cut the standard threads in each for a two-inch pipe. Put the pipe together, caulk securely, plug the ends tightly, and put a plug in the eight-inch opening of the T, with the center drilled and standard thread for a five-inch wrought iron pipe. Place a six-inch nipple in each of the two-inch holes in the large pipe and lower the pipe into the water, placing it in the center of the excavation. Screw in the five-inch wrought iron pipe, which must be of sufficient length to reach the surface. An ell must be placed on the upper end of this pipe for use in attaching engine.

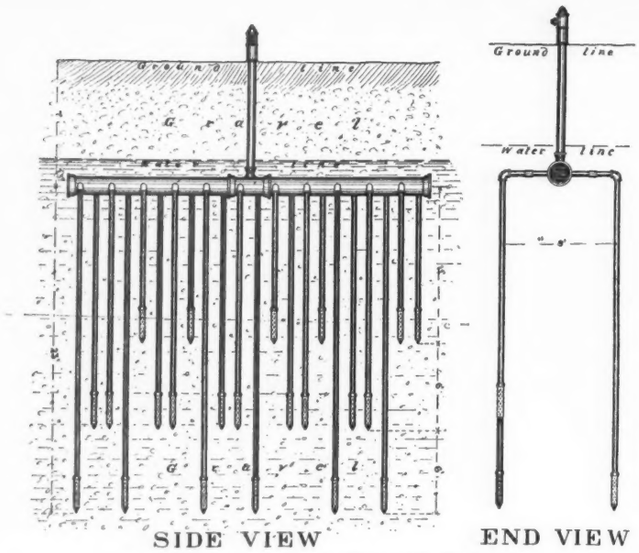
Commence driving points at one end and on both sides of the water main (or reservoir), being particular that the points are driven from four to six feet from the main and in line with the nipple to which it is to be coupled. The points should be put down at irregular depths—none less than ten feet—and from that to eighteen or twenty feet. Drive the points until the top of the pipe with an ell attached will be in line with the nipple on the main. Connect this to the nipple with a "union," being particular to make good and tight connections. After two or three points on a side have been put down and connected, any wash that may have worked its way into the ex-



PLAN

AS PIPES APPEAR FROM ABOVE

* Chief of Fire Department, Janesville, Wis., who read this paper before the International Association of Fire Engineers, held at Indianapolis, Ind., August 27-30, 1901.



SECTION SHOWING ARRANGEMENT OF PIPES

cavation may be thrown to this end and the pipes covered as fast as connected. When two or three pipes have been connected plugs or caps will have to be placed on the remaining nipples to prevent a flood of water in the pit, and a good size pump must be kept constantly at work while connections are being made. The points all driven and connected, throw back the earth and grade up the street. Procure a swivel coupling connection—brass—reduced to the size of the engine suction hose. This will screw into the five-inch ell on the well, where it will be permanently, and permit the easy attachment of the engine, no matter to which the suction hose is attached first, there being a swivel at either end.

READY TO BE TESTED

The well is now ready for an experimental test. Attach your largest engine; let it work easily and slowly at first and see that all sand has disappeared. You may find a little fine sand at first, and for two or three minutes the water may be colored. It is now clear water. Open up your throttle and see the result. There will be no let up in the water supply.

It would be well to use a foot, or check, valve where there is over a twelve or fifteen foot lift of water. In such case the valve should be placed in the T before the pipe is connected and caulked.

COST OF CONSTRUCTION

Naturally, the question will be asked: "What will a well, as outlined and described, cost?" The material and labor required in the construction of the well as I have outlined will cost, approximately, as follows:

720 feet 2-inch pipe	$75.00
24 2-inch nipples	3.00
24 2-inch unions	5.50
24 2-inch ells	3.50
24 2-inch points—60 gauze	42.00
1 5-inch ell	.50
2 lengths of 12-inch water pipe	25.00
1 12 x 12 x 8 cast iron T	12.00
Excavating	50.00
Driving points and connecting pipes	25.00
Lead, etc., for caulking, and caulking	5.00
21 feet of 5-inch wrought iron pipe	8.40
Cutting pipe and threads	25.00
Extra 2-inch couplings	4.00
Back filling and grading	10.00
Brass connection for hydrant	20.00
5-inch foot or check valve	7.50
Pine slabs and sawing	5.00
Total	$326.40

SYSTEM NOT POSSIBLE EVERYWHERE

Let it be well understood that this kind of water supply cannot be obtained in all localities. The water line must be within reach of the suction of an engine, and the points, no matter how deep they are driven, must rest in a gravel formation. The placing of the twelve-inch water pipe, to which the points are all connected, two feet below the water line, gives a free flow of water into the pipe under an eighteen-inch head, faster than any steam fire engine can take it out.

Should it be desirable to arrange for connecting two engines to the same well, which is not likely to occur, it would be well to place a reducer at each end of the large pipe, omit the T in the center, and place a hydrant at each end. In this case it would be well to increase the number of points to thirty-four or thirty-six. The flow of water into the main pipe is of sufficient volume to prevent the interference of the engines working at the ends.

I have had drawings made of one of these wells as constructed by myself, and they are reproduced here, believing that they will explain the system better than words. The first illustration represents the general plan; the second, the end view; the third, the side view, and the fourth (a half tone), an engine at work at this well, throwing two one and one-eighth inch streams, using the Eastman nozzles.

NO CHARGE FOR MAINTENANCE

It is claimed by some that fine sand will drift into and settle in the points and eventually clog the pipe, and also that fine gravel will cluster close to and around the fine wire gauze which covers the points and stop the flow of water. I have had considerable experience with driven wells; have one at my home which has furnished water for domestic use for twenty-five years, the point having never been disturbed, and the flow of water is as free to-day as it was at first. The rapid draught of water from these points keeps them free of fine sand which may find its way into the same, and the back flow, when pumping ceases, clears the gauze of fine gravel.

Once constructed, these wells require no further attention. They are always ready with an abundant supply of water for fire purposes.

POLICE AND FIRE ITEMS

—The policemen of Chicago think that they can shoot as well, if not better, than their brother officers in New York or any other city. To prove their prowess they have challenged the police of New York and San Francisco to a three-cornered shooting match, to be held on some Saturday before the first of October, for the Chicago *American* Trophy.

—The Police Commissioners of Yonkers, N. Y., have retired Capt. James McLoughlin, who has been chief five years. He had been found guilty of taking the law in his own hands in discharging from custody a noted gambler that had been arrested. After having told the members of his force that he heard that pool rooms were open, he stated before the Commissioners that he knew of no pool rooms in the city. He was retired upon half pay as he had reached the age of sixty years.

—Benjamin Murphy, Chief of Jersey City, N. J., is determined that no one shall exhibit about the town posters that are in any way suggestive. Last year he arrested an advertising agent of one of the theatres for posting theatrical lithographs of scantily attired ladies and compelled the pasting of blank paper over portions of the pictures. This year another theatrical bill poster was wise enough to call at police headquarters and get the approval of the chief before attempting to put up his lithographs. Some the chief ruled out and over the printing on others he ordered paper to be pasted, and declared that the billboards would be examined every week.

—The New York City police have the long-talked-of "three platoon system." There was a howl from the men who had "soft snaps" in the way of assignments to institutions and many of the old and fat men who have not "pounded the pavements" for many years. The system has now been in use for a month and Chief Murphy considers that it is the best that has ever been tried. In this connection it may be said that the city of Buffalo, N. Y., has had this system for the last ten years, and it has been perfectly satisfactory.

ADMINISTRATION OF PRIVATE FIRE DEPARTMENTS

By Herbert Heston*

WELL organized and equipped private fire departments are no longer an experiment, but are recognized as a necessary and useful part of a well disciplined whole by many corporations and large business concerns. They are looked upon with favor by the insurance fraternity, and should be welcomed as needful helps by regular fire departments when organized, equipped and managed along the lines laid down for the direction of regular firemen.

The task of organizing and drilling a private fire department is not a small one, nor to be considered in the light of a "cinch" by the man selected for the head of the department. He should fully realize the responsibilities he is to assume and remember that his department should have the best of his ability in thought and action, and his whole time should be devoted to his work and nothing should interfere with a self-sacraficing devotion to duty. He should keep abreast of the times in all matters pertaining to fire prevention and protection; be posted on the latest and best improvements in fire appliances; read the well edited fire journals, and be a member of this association where, by mingling with chief engineers, from all over the country, Canada, and, at time from abroad, he may glean practical knowledge, good advice, and new ideas, that will prove of incalculable value upon many occasions. I can speak knowingly on this matter for, since joining this association in 1893, I have been brought in contact with many "past masters" in the strenuous profession of fire fighting; have received from them many lessons, suggestions, and practical points that have been of benefit to myself and the department I have the honor to command.

To the chiefs of private fire departments all over this country I would say, "Come among us, and we will do you good." The chief of the private fire department should have some practical knowledge and experience as a fireman, should have the selection of his assistants and men, have the cordial support of the officers of corporation or business concern with which he is connected, and have full and complete control of men and apparatus when a fire occurs. The men of his department should be young, active, fearless and, at least, fairly well educated. They should be frequently drilled in the use if their various appliances, but at no set time or place the alarm should be sounded as for a fire, the department put in action and any mistakes or defects corrected at the time of their occurrence.

The appliances should be of the best and most approved kind, as near like those of the regular fire department of the city as possible. Cheap fire apparatus is a snare and delusion, and liable to leave the department in a lurch when an emergency arises. "Nothing can be made too good for fire department use" applies to the private department as well as the regular one. Gamewell fire alarm systems, first class fire pumps, good hose, "A1" chemical engines and extinguishers, relief valves, shut-off and spray nozzles are some of the appliances necessary for the proper equipment of a private fire department that is up-to-date and efficient.

The relations existing between the chief of the private department and the chief of the city department should be of the most cordial nature. I would say, cultivate the friendship and good will of the city chief, consult him on matters pertaining to the protection of the property under your charge, go to city fires and help where you can, and if the fire happens to be in a location where your department can be of assistance to him, offer your services, take directions from him, then "pitch in and go to work," and my word for it, after an experience of eighteen years, you will not regret being able to "render aid in time of need" as the city chief will not forget your action, and should the fire occur on your property he would work the harder to extinguish it and repay your efforts in the past.

* Chief Fire Marshal of the Pennsylvania Railway Company, Philadelphia, Pa., who read this paper before the convention of the International Association of Fire Engineers, held at Indianapolis, Ind., August 27-30, 1901.

MEETING OF PACIFIC COAST FIREMEN

THE Pacific Coast Association of Fire Chiefs held its ninth annual convention at Tacoma, Wash., August 14-16. The newly elected secretary, Mr. H. W. Bringhurst, reports a most successful meeting. The attendance numbered between forty and fifty, and came from Dawson, Yukon Territory, on the north, to California on the south, and easterly as far as Baker City, Ore.

On the 14th the chiefs were taken to Stone's Landing to a clambake and lunch where Chief Fox, of Baker City, on behalf of the association, presented Captain Burley, of Tacoma, with a nugget pin in token of its appreciation of his hospitality. At the business session in the afternoon, ex-Chief Deasey, of Victoria, read a paper on the appointment by the Government of the United States and Canada of a commission to investigate means of reducing fire losses. In an able manner the speaker showed the terrible loss caused by fire in the two countries, a loss estimated at $200,000,000 a year, and pointed out the best means of reducing this appalling amount. As the cities do not take the precautions, appeal should be made to the Federal authorities, by this means lifting the appointments to the department out of politics.

The evening session was opened by Chief Cook, of Seattle, who addressed the convention on the benefits and advantages of modern fireproof construction. Chief Cook told how a small extra expenditure in building would be the means of saving vast sums of money, to say nothing of precious lives. He showed what a building should be like and also what they often are, citing several cases from his own experience.

In the ensuing discussion, which chiefly centered on building laws and inspection, Chief Deasey suggested that the members should circulate the building ordinances of their respective cities.

Chief Campbell, of Portland, then read an address on chemical engines and their advantages. The speaker was enthusiastic in his praise of chemical engines, and stated that the percentage of fires in Portland extinguished by them was seventy-five. The chiefs of Spokane, Seattle, Tacoma, Victoria, B. C., and Calgary, Alberta, spoke most favorably of the work done by chemical engines, most of them being responsible for the extinction of 80 per cent. of the fires in the respective cities. Chief Cook, of Seattle, characterized them as being "worth their weight in gold," and ex-Chief Deasey, of Victoria, said that to be without a chemical engine in active use was to be out of the race in fire protection.

The forenoon of Friday, August 15th, was spent in inspecting the different engine houses in the city and witnessing a splendid exhibition run by three of the companies. At the evening session a valuable paper on "The Fire Marshal and His Duties; the Benefits Derived Therefrom," by Fire Marshal Kellogg, of Seattle, was read by the secretary, and various speakers followed in commendation of the work done by such an officer. Several expressed the hope that a state fire marshal might be appointed, as this would be a measure of great benefit to the smaller towns, which could not afford to maintain one at their sole expense. Chief Poyns alluded to the recent law enacted by the state, creating the office, and the failure to provide any compensation for the work. The speaker considered this advance, small as its effect was, would prove of benefit as the beginning of better legislation regarding fire prevention.

W. E. Hughes, electrical inspector of the Washington Insurance Association, followed with a most interesting and instructive address on "Safe Electric Wiring and Electrical Hazard Endangering Firemen." After reviewing in a concise way the rules that should govern the wiring of buildings, Mr. Hughes passed on to the consideration of the risk to firemen's lives in dealing with electric wires.

The officers elected for the ensuing year were as follows: President, Chief A. H. Myers, of Spokane Wash.; Treasurer, Chief J. H. Carlisle, of Vancouver, B. C.; Secretary, H. W. Bringhurst, of Seattle, Wash. The convention will meet next year at Victoria, B. C. The chiefs were the guests of the city in the evening at a grand banquet at the Tacoma Hotel.

TO PROTECT FIREMEN FROM HIGH TENSION CURRENTS

Wires Should Be Placed Underground—Owned and Operated by City—Dangers From Defective Insulation—Valuable Suggestions

By Morris W. Mead*

THE danger to life attending the work of a fireman when fighting fires is, in many instances, far greater from electric light and trolley wires than from the element with which he is battling. In running overhead high potential wires in the business portion of most cities, there is too much carelessness in the arrangement of the circuits. Experts of the large lighting companies, as a rule, know what is best and safest in the premises, but expense figures in the matter, and the superintendent who can construct the lines or run the plant the cheapest is too often the chosen one. For instance, a city lighting circuit, for street lighting, is too often run more like a circle, one side of it down one avenue or street, and along another, then up a third or fourth street, with the other side of the circuit, so as to save a little wire in its construction. Thus it is almost impossible to arrange switches so as to properly cut out the circuit in case of fire. By this arrangement a switch cuts out one side only, and does not properly open the circuit, the opening of both sides of the circuit at the same time being essential to the cutting off of all danger.

CIRCUITS SHOULD BE RUN PARALLEL

I believe all such electric light circuits should be run in parallel, and at regular intervals lead off to switches, and that such locations should be numbered and blue prints of every switch and location of every circuit prepared and kept on file at headquarters of the fire department. These should all be carefully studied and gone over either with an expert of the local company, or with a competent city electrician. The firemen should even be trained and instructed in managing the switches, as well as in general electrical principles, so as to understand the easiest and safest manner of handling them in case of the emergency of a fire, as well as the difference in single or double pole switches. Every circuit should be labeled at regular intervals with the voltage it carries, and all controlling devices should be made to correspond. Trolley wires can be arranged on the same principle in crowded cities, so that they can be cut out at every one to two thousand feet, and these places carefully marked and records placed on file at department headquarters. Especially in the larger cities, one or two electricians should be attached to the fire department and go to all fires with the first district, just to assist in handling the matters as above outlined, as well as, in the meantime, to instruct the members of the department in self-protection from high potential currents.

WIRES UNDERGROUND IN CERTAIN SECTIONS

Next, one of the best remedies is for cities to compel all wires to be placed under ground in the business sections, and on all main avenues leading out of the central portion of the city to the suburbs. Electric light companies in all cities can afford to do this, and legislative powers should compel its application, but in regard to trolley lines, all cities are not so situated naturally as to make successful the underground trolley system. While New York City and Washington might successfully do this, I should doubt its feasibility in Pittsburg, or cities situated where there are so many hills or extensive rise in rivers, which sometimes cover the lower lands. In Pittsburg, on occasion of spring freshets, the rise in the river would cut out the power from an underground trolley system, while the heavy rains flowing down the hills would ground the trolleys, since in a hilly district it is almost impossible to arrange for proper sewerage of sufficient size to carry off the surplus water without interfering with the motor power or the trolley system underground. Feed wires, however, could be all properly placed underground and feed outlets arranged at stated intervals in all cities, thus doing away with much of the obstruction and some of the danger.

* Superintendent of Bureau of Electricity, Pittsburg, Pa., who read this paper before the convention of the International Association of Fire Engineers, held at Indianapolis, Ind., August 27-30, 1901.

MUNICIPAL CONTROL

The next step towards eliminating these dangers should be a complete city control over these matters. Ordinances should be passed placing supervision of overhead wires in the hands of a competent city electrician, or, as above suggested, compel underground construction. I am a believer in municipal control, as distinguished from ownership, especially in electrical matters, and believe that under competent city authority the dangers which firemen fear from electricity could be obliterated. I have also asserted and believe that the control of all electrical interests in each individual city should be under one head. By this concentration, backed up by reasonable ordinances, such as could be suggested by a competent head, all the matters which now look dangerous to you from an electrical standpoint could be controlled. It is too often the case that large centers of population will have a superintendent of a fire alarm, a superintendent of the police telegraph, one or two inspectors of electric light work, a city electrician with limited powers, thus practically having three or four superintendents, who should all be under the control of one man. We live in an age when systematized effort is the word for the hour, and system demands concentration under one authority.

SINGLE HEAD NEEDED

One of the questions of the hour is how to reform municipalities. If those in charge of any public function were so trained or educated as to be able to take care of any or all portions of similar work, or the different branches of the same work, in other words show a thorough competency, much of the clamor for municipal reform would be done away with.

It seems to me that the one who stands between this vast ignorance on electrical matters on the part of the people and the firemen, if you please, and the municipalities, are competently prepared chief engineers, and the municipal electricians. They must, in the future, more than ever, represent the safety valve of electrical protection. So I simply make the plea for the same system in the matter of protection to firemen. In politics there is developed the "Boss," in religion we have controlling individualities, and in all forms of business, electrical, municipal and otherwise, we must have the one man power, without which there is no means of fixing responsibility, and no possibility of getting the most prompt and trustworthy service and protection in emergencies.

AID FROM ELECTRICAL COMPANIES

Another safety arrangement which would naturally suggest itself in the protection of firemen in fighting fires from electricity would be that all electric light and power companies, railroads included, should have thoroughly equipped wagons, located at reasonable intervals along their lines, with competent men in charge to respond in every case of fire, and thus be the means of one or more additional safeguards to those who are there to assume the responsibility of managing fire department matters. I should think this would be a good thing to do from the standpoint of economy for the companies themselves, to say nothing about the protection it would afford to those who have to assume risk and danger. Gongs connected with the fire department lines should be in all such headquarters, and if necessary there should be two crews, attached to relieve each other, or else to sleep there regularly as firemen do and answer day and night. Rubber boots and rubber gloves should be furnished to the firemen, and also insulated pliers, with which they can easily and readily cut off wires in case of necessity.

DANGER FROM DEFECTIVE INSULATION

The insulation on overhead wires very rapidly disintegrates through chemical conditions which exist in the atmosphere, as well as from exposure to heat and storm, and because of these conditions there is al-

ways a variety of paths for the current to escape to the ground, so that it is absolutely necessary, as previously suggested, to have switch arrangements at regular intervals; to run the circuits both sides, side by side, or in parallel, taking both sides to a double pole switch cut-out, so that in opening the switch both sides are cut at once. This will do away with the liability of the grounded conditions above spoken of, which may come from either poor insulation or any other cause whatever. This condition should exist in all circuits carrying over 300 volts. Cutting a circuit under load is not always easy or safe. It is done usually one wire at a time, or in electrical parlance, "one leg being down," and when the second leg or side is severed, accidents are liable to occur. Thus a system of cut-outs at pre-arranged intervals on all overhead lines carrying 300 volts or over, should be located on maps and the same filed with the fire department and the municipal electrical bureau. This is one of the most practical and effectual ways of securing immunity. On all large systems probably there would be considerable expense in furnishing these extra cut-outs, but some provision should be made for equipping and arranging a certain amount of old lines yearly, and all new work should be according to the standard herein proposed. Two or three thousand feet is suggested as the best distance to separate cut-outs —expense and safety considered.

REMEDIES SUGGESTED

In closing, I would place, first, a thorough municipal control, under one head, on all municipal electrical matters, backed up by a legislative power to compel compliance to reasonable suggestions.

Second, I would compel all overhead wires, especially electrical light and power wires carrying 300 volts and over, to be placed underground in the business parts of all cities and towns and along all main avenues leading to the outlying districts of the city. I would compel all feed wires for railroad purposes to be placed underground, and wherever the local conditions warrant, to install the underground system.

Third, I would compel, in overhead construction, all circuits to be run parallel or side by side, and at intervals of every two or three thousand feet lead off to properly protected and covered double pole switch cut-outs. That the voltage of every circuit be marked upon it at regular intervals. That these locations, as well as the location of every circuit on each pole, be carefully mapped and blue printed, and copies left at the fire chief's headquarters, and at the headquarters of the municipal electrician. That the men be carefully drilled as to the location of these cut-outs and circuits, and in the proper methods of handling the same. That one or two men, competent electricians, be detailed to go to all fires. That the companies, both lighting and railroad, be compelled to have special wagons and outfits controlled by competent men placed at regular intervals through the business parts and built up sections of the city. That they have gong attachments and all necessary communicative features with the fire department proper. That they answer every alarm, and that the men be compelled to sleep at these several locations, or that a duplicate force of competent men be employed.

Lastly, that reasonable precautions for safety be furnished each fireman, by way of rubber boots, rubber gloves, and insulated temporary tools, to be used in all cases of necessity.

FORMALDEHYDE IN MILK

Preservative Necessary Because of Dairyman's Carelessness—Antiseptic Value of Recent Discovery—Use of Preservatives Not Common as Supposed—Several Tests

By E. G. Horton*

Milk is the only food for a considerable number of infants, is the chief food of many children, and furnishes, in its natural condition or in varied combinations with other foods, a portion of the nutrition of adults.

Milk has therefore a just claim as one of the necessities of life. With some of our vegetative foods, like the fruits and grains, there is a time for harvest once a year, and, although the harvest periods are so far apart in time, the grains and fruits are so constituted by nature that they may be kept with little care until a subsequent harvest. Nature has caused milk production to be a continuous operation in due season with the milk producing animals, of which the cow may be taken as the type, but since man has found it convenient and economical to milk the cow twice daily, is it not unreasonable for him to expect to keep milk in its natural condition, not only beyond the succeeding milk harvest, but also beyond the second and even third one? Nature answers yes, and therefore milk once drawn, if left uncared for, soon becomes unfit for use by virtue of changes wrought by microbic life. It is only Nature's way of telling man he must not be negligent in his use of this food so wisely furnished fresh to us day by day. However, milk drawn with proper cleanliness and kept in clean dishes will remain sweet and usable without other especial care, not only beyond the next time for milking, but even hours longer, according to season and temperature. Man's lack of cleanliness in collection of milk and in proper care of it subsequently has led him to resort to artificial means to cover his negligence and lengthen the keeping period of the milk against Nature's law. As a result preservatives are employed, and many of them have been used in milk, but unquestionably the one most in vogue is formaldehyde.

ANTISEPTIC POWERS OF RECENT DISCOVERY

Formaldehyde (H C H O), the simplest combination of hydrogen, carbon and oxygen, was discovered a third of a century ago, but for twenty years was merely a chemical curiosity, and it is only within the last decade that its germicidal and antiseptic powers have brought it into prominence and eventually caused it to be used as a preservative for milk as well as other foods. For ordinary uses formaldehyde appears on the market as an aqueous solution of from 33 to 40 per cent. strength under the trade name *formalin*. As a milk preservative it is also sold under various disguises as formol, freezaline, freezine, preservaline, etc. Other substances may be sold under one or more of these names, e, g., one preservaline may be found to contain formaldehyde and another boric acid.

While it might be possible for the skilled scientist working with known material of known strength to add so exact a quantity of formaldehyde to milk as not to render it unfit for a child's consumption and still improve the keeping quality of the milk, we must confess this hypothetical case falls far short of the conditions as they occur in the dairy world to-day. Where formaldehyde is used in milk it is generally added by one not accustomed to accurately measuring small quantities of powerful drugs or chemicals, and moreover he probably does not know the strength of the mixture he is adding, and frequently is even ignorant of its true nature. Again he is told to use about so much, but that considerably more may be used as occasion demands, and that the use of the preparation cannot be detected. It is well that such conditions are met by legislation, and we find the selling of milk containing formaldehyde is a violation of the laws of the State of Ohio as well as of many other States.

USE OF PRESERVATIVES NOT COMMON

Occasionally some one says all milk dealers use preservatives, or 85 per cent. of them do, or 95 per cent. of them do, etc. Such statements are absurdly false. There are unquestionably many milk dealers who are honest and serve honest milk, and furthermore, they are clean enough in their methods of handling the milk so that they do not have to rely upon the aid of formaldehyde or a similar agent. On the other hand, it is sadly true that in far too many communities there are dealers who through ignorance or unscrupulousness do add foreign and forbidden substances to the widely used milk.

* Bacteriologist and Chemist, laboratory of the Ohio State Board of Health, Columbus, O.

Since the adulteration exists and the only available remedy at present is prosecution, there must needs be detection of the adulterations. The detection of the presence of formaldehyde in milk is comparatively easy for one who has had some laboratory experience. Quite a number of methods for the detection of formaldehyde in milk are in use, and without attempting to review all of them, it may be helpful to some readers of the *Bulletin* if we give briefly at this time a few of the simpler tests. Some good tests involve distillation—a process not always conveniently available and omission is accordingly made here of those tests.

1. HEHNER'S TEST

Place 10 to 15 c.c. of conc. sulphuric acid in a test tube, and carefully pour down the side of the tube some of the suspected milk so as not to mix the acid and milk. If formaldehyde is present a violet color will appear at the point of contact, instantly or after a short time, according to the amount of formaldehyde present. One part in 15,000 may be detected.

Caution. The acid should be of 1.81 to 1.83 specific gravity, and must contain a trace of iron. If chemically pure acid is employed, a drop or two of a ferric chloride solution should be mixed with the acid before the milk is added. The charring due to the action of the acid should not of course be mistaken for a color reaction.

2. THE HYDROCHLORIC-IRON TEST

To 10 c.c. of the suspected milk in a test tube, add C. P. hydrochloric acid and a drop or two of ferric chloride, mix the contents by shaking, and set the tube in boiling water. A purple color appears varying from a delicate tint to a dense color if formaldehyde is present. This test is very delicate as one part in 500,000 or even less may be detected. Some workers use concentrated acid, others one part of concentrated acid diluted with one or two parts of distilled water. The strength of the acid is not so important as the presence of a trace of iron.

Leonard and Smith recommend 3 to 5 times as much acid as milk and say the delicacy of the test is 1 : 1,000,000.

Caution. If a yellow color appears repeat the test, using milk which has been diluted 1 to 10 with water.

3. THE DENIGE TEST

The following fuchsine solution must be prepared:

40 c.c. of ½ per cent. solution of fuchsine.
250 c.c. of distilled water.
10 c.c. of 40° B sodium bi-sulphite.
10 c.c. of C. P. sulphuric acid.

The solution is ready for use after standing for a few hours.

Add about one c.c. of the above solution to 10 c.c. of the suspected milk and let stand for five minutes. Add 2 c.c. of C. P. hydrochloric acid and shake. A violet color will appear in the presence of formaldehyde, a yellowish white color in its absence. One part in 50,000 may be detected.

4. RIMINI'S TEST

A weak solution of phenylhydrazin hydrochloride, a fairly strong solution of sodium nitro-prusside, and a strong solution of caustic soda are required. They may be made up as follows:

a. 1 gram phenylhydrazin hydrochloride dissolved in 200 c.c. of distilled water.

b. 10 grams sodium nitro-prusside dissolved in 60 c.c. of distilled water. This solution should not be kept too long.

c. 10 grams sodium nitro-prusside dissolved in 40 c.c. of distilled water.

To 10 c.c. of the suspected milk in a test tube, add about 10 drops of *"a,"* shake, add three drops of *"b,"* shake, then carefully let 2 or 3 drops of *"c"* trickle down the inside of the tube. If formaldehyde is present, the path of the caustic soda through the milk is marked by a blue color which turns to red on standing. If the milk is sour a green color appears. Capable of detecting 1 : 30,000 and has been reported as detecting 1 : 100,000.

5. JORISSEN'S TEST

Several drops of a 10 per cent. aqueous solution of phloroglucinol are added to 10 c.c. of the suspected milk in a test tube, the tube well shaken, and a few drops of caustic potash (or caustic soda) added. If formaldehyde is present a red coloration results. Delicacy of test 1 : 20,000.

Caution. This reaction may be obtained in the absence of formaldehyde in some artificially colored milks, and the test should be confirmed by one of the other methods.

In some cases formaldehyde may be detected by its characteristic odor when the milk is warmed. We would call attention to the possible disappearance of formaldehyde from milk in old samples as reported by Hehner. Occasionally we are asked what is the best test, but have to reply it is a matter of choice, as some analysts prefer one method, others another. At present the hydrochloric acid-iron test is in high favor at some laboratories. There may be errors in special cases by any one given method, and it is certainly advisable when a positive reaction is obtained to confirm it by employing at least one additional method and preferably more.

ST. LOUIS' NEW POLICE STATION

ST. LOUIS has just completed a new police station. The building has been six months in the course of construction and its cost will not exceed the original appropriation of $23,200.

In its appointments it is considered one of the finest district stations in the West, and is by far the finest in St. Louis. It is thoroughly ventilated and equipped with all modern conveniences, such as bathrooms, electric lights, steam heat and electric fans.

On the main floor is a spacious office, with auxiliary offices, for captain, lieutenant and a sergeant's private room. The calaboose section contains five strong steel cells, with an open court, paved with graniloid. On the second floor is the main hall, which will be used as an assembly and drill room for the officers.

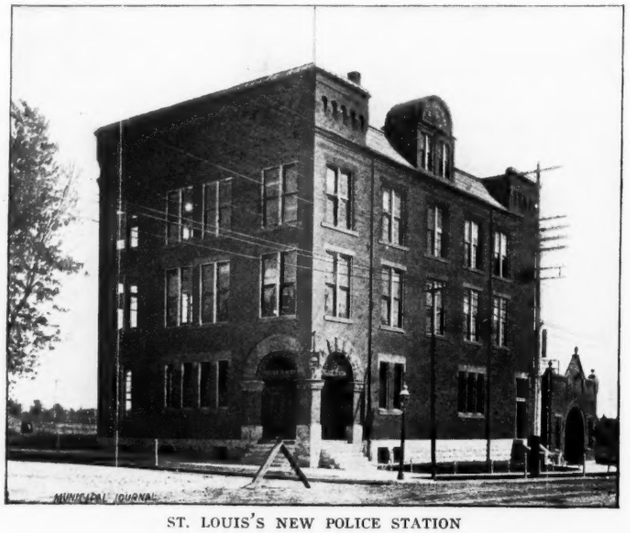
The upper floor is divided into three parts; one section is used for the storage of riot guns; another for the Police Relief Association, and the remaining section is a large room which may be utilized for sleeping apartments in the event of a necessity for the establishment of a temporary eight-hour system for patrolmen. If occasion demanded, it could be used for police court sittings.

The cellar is paved with graniloid and contains the heating apparatus. All of the piping for the sewerage system is above ground, so as to be accessible in the event of emergencies. Between the stable and the patrol house is a ten-foot graniloid walk.

The patrol house is twenty feet high, contains three box stalls, 10x10 feet, and an open space in front for the wagon and captain's buggy.

On the east side of the building is a graniloid paved space twenty feet long, running from Magnolia avenue to the alley. On the Grand avenue front is a grass lot fifteen feet wide, running the depth of the building. It is separated from the pavement by an iron chain fence.

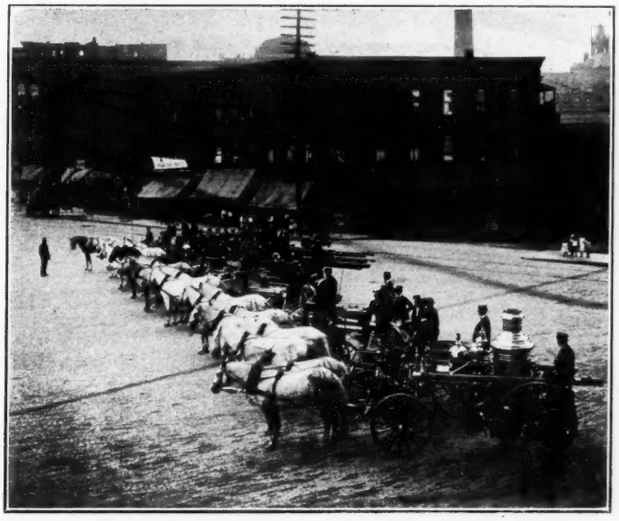
The street on the Magnolia avenue front has been graded and new curbs and gutters have been constructed.



ST. LOUIS'S NEW POLICE STATION

POLICE AND FIRE ITEMS

—The city of Jamestown, N. Y., which lately entertained the convention of the League of American Municipalities, has a fire department of which it is very proud. Seventy-three years ago the necessity for fire protection became apparent to the inhabitants of the then little village. The tax payers authorized the trustees of the village to raise the sum of $300 by tax for a fire department. For those days this was a large sum and consequently the conservative trustees used great care in the selection of the apparatus for the proposed department. It was two years before the first company was organized and this was named "Fire Company No. 1." Its apparatus consisted of a little red wagon hand pump, called the



JAMESTOWN'S FIRE DEPARTMENT

"Active." Ellick Jones was captain and all the officers were prominent citizens. Renamed the "Deluge Engine Company," this first company successfully defended its title as the oldest company in Jamestown when others tried to wrest the honor from it.

In the early days water for fire purposes was kept in storage reservoirs located in various parts of the city, and it was not until 1886 that a general system of water works with powerful steam engines made possible protection for all the city and immediate suburbs. There are now two engines, one hook and ladder, four hose and one fire police company, with a force of 250 men.

* * *

—There is at least one position in which the negro surpasses the white man. The city of Columbia, S. C., has had to again employ negroes to drive its fire apparatus, as they do better than the white drivers.

* * *

—During the year 1900, Manchester, N. H., had 198 fires, with a loss of $12,877. The report of Chief Thomas W. Lane shows a working force in the department of 160 men, two first, three second and one third size engines and four hook and ladder trucks. Only thirty-three of the men are permanent, the rest being on call.

* * *

—Chief Swingley of the fire department of St. Louis, Mo., is advocating the appointment to the department of a physician. It shall be his duty to attend all big fires, examine all applicants for positions, visit firemen reporting sick and do many other things. At present the health department acts as an examining board.

* * *

—There is but one volunteer fire company in the city of Denver, Col., and it is known as the Murray Hose Company. Its location is in the old town of Colfax and the company consists of about twenty-five men, citizens of Colfax and Highlands. The company was organized about two years ago and was named in honor of Matthew Murray, Alderman of the Sixteenth Ward.

—The annual report of F. J. Murphy, chief of the fire department of Utica, N. Y., gives some interesting data of the workings of his department. The school of instruction, open for six months of the year, has proved itself of the utmost value in training the men for actual service. Each class is trained for two weeks alternately. During the year there were 168 fires, with a total loss of $42,895.

* * *

—Chief George A. Wallace, of the Cleveland, O., fire department, reports that there are 410 men in the service, 154 horses, two fire boats, twenty-five engines, nine hook and ladders, three chemical engines and a water tower, besides other pieces of apparatus. The number of alarms sent in amounted to 1,492. There was a total loss of $944,752, and the insurance loss amounted to $821,658.

* * *

—The report of the Fire Commissioner for the Borough of Brooklyn, N. Y., for the first quarter of the year, gives some interesting statistics. There are sixty engine, seventeen hook and ladder companies and two fire boats. Of the engines, eleven have additional equipment of hook and ladder trucks and two are supplied with water towers. There were 398 horses in service. Over twenty-nine million gallons of water were consumed, nearly twenty-four millions coming from the river. From the street boxes and verbally 775 alarms of fire were sent in. The telegraph bureau received and transmitted 950 alarms, 551 of which were firsts, thirty-three seconds and three fourths. The service has been greatly improved by the introduction of keyless succession fire alarm boxes in prominent positions, and they have given perfect satisfaction.

* * *

—On July 16th the Insurance Society of Philadelphia was organized by fire insurance men. The object of the society is to improve the methods of protection from fire and to acquire expert knowledge of their profession. It is likely that a laboratory will be established where demonstrations may be given of the dangers of storing and selling certain substances, the hazards of manufactures, as conducted under modern methods, and the practical way of inspecting electrical hazards. At the first meeting Inspector William McDevitt, of the Fire Underwriters' Association, made some tests to prove that certain substances, held to be non-explosive by chemists, were highly explosive when subjected to heat and smoke. He demonstrated the explosiveness of chlorate of potash and also showed the dangers of picric acid, potassium permanganate, carbon disulphide, celluloid and various grades of gun-cotton.

* * *

—The automobile trucks now in use in Paris carry six men, and the apparatus first needed at a fire, viz., ladders, ropes and a reel of canvas hose. The automobile pump, as the French call the fire engine, was exhibited at the Exposition of 1900, and attracted a great deal of attention. It has since been in operation for six months, and has given complete satisfaction in every respect. The start to the fire is made in from ten to twenty seconds, in place of a minute and a half, and the electric engine is able to throw a stream of water instantaneously, which is a gain of four minutes over the steam pumps. A suction pump is also attached to the engine, by the use of which it is possible to draw water from a depth of twenty-three feet. By an ingenious arrangement, the forward box of the fire automobiles contains a cable carrying ten incandescent lamps of incalculable service in case of cellar fires and for night work. The moment the engine arrives at a fire it begins to utilize the hundred gallons of water in its tank, which, under ordinary circumstances, will suffice for five or six minutes. Meanwhile the hose is coupled to a hydrant, and then, if the fire requires it, the attack is pursued as usual with steam and hang engines, but in all cases valuable time has been gained by the preliminary and immediate action of the electric fire engine. The engine in running order weighs about 6,500 pounds. The pump has three chambers and forces the water through the axis of the reel into the rubber hose, which carries a nozzle provided with three screw orifices of different diameters, by means of which it is possible to vary the discharge and pressure.

—The city of Wilmington, Del., has a police force of eighty-nine men, and costs nearly $80,000 a year to operate. The earnings of the department for the last year were $8,790.85 and came from fines, dog tax, sale of unclaimed goods, etc. The chief claims that the force is not large enough, and asks that additional men be appointed so that officers may be placed at the points of intersection of the different street car lines.

* * *

—Turtle Creek, Pa., is without a fire department just at present and the fire apparatus is for sale. Because the council would not allow the volunteer firemen a certain amount for expenses, the hose, nozzles and rubber suits were tossed into the street. The building, hook and ladder wagon, hose wagons, etc., the firemen claim belong to them and they have refused to allow them to be used, or to go out themselves, in case of a fire.

* * *

—The report of the Superintendent of Fire and Police Telegraph of the city of Wilmington, Del., states that the storage battery, installed in 1896, has given the greatest satisfaction, and has been a saving during the time of $5,000, as against the cost of maintaining the old gravity battery. The city also owns the telephones used by the police department, and the department is relieved of the annual payment of $240, while better service is given than under the old system.

* * *

—The head of the fire department of Rouen, France, has suggested to the mayor a novel method for use in the fire fighting service. Inasmuch as the city is traversed by electric street-car wires, it is suggested that there should be provided pumps, driven by motors, to take the current from the street car wires by means of a wire hooked to them at the nearest point to the fire. If this be acted upon, the fire service in Rouen will be rendered equal, if not superior, to that in any of the other cities of Europe.

* * *

—The inadequate water supply of Kansas City, Mo., is driving all the fire insurance companies from the city. The fire losses for the present year have aggregated $500,000. About $750,000 is paid a year in fire insurance premiums. Thirty-seven companies have withdrawn from the city within two years, and four others have announced their intention of doing likewise. Business men are no longer able to get insurance, a $10,000 line on rolling stock having been offered to every company in the city and refused.

* * *

—The next meeting of the International Association of Fire Engineers will be held in New York City. A committee of citizens and fire officials attended the convention to extend the invitation of the New York Department and insurance men to have the convention come to New York in 1902. The committee was composed of Thomas E. Crimmins, Dr. Harry M. Archer, Surgeon of the Firemen's Cycle Club; Chief Mayhew W. Bronson, of Larchmont; Chief Edward F. Croker, of New York; D. A. Woodhouse and W. M. Schwenker.

* * *

—If for nothing else, the report of Chief I. D. Applegate of the Hoboken fire department would be of great interest on account of the great fire in April, 1900, in the North German Lloyd Steamship Company's docks. The report contains a detailed account of the fire and of that in the tenement houses on July 3, when the men were exhausted from fighting the previous conflagration. The department consists of fifty-nine men and twenty-one horses. There are but five second size engines, one chemical engine and two aerial trucks. Exclusive of the dock fire, the total number of fires was 199 and the loss $143,905.

A NOVEL ELECTRIC CONDUIT

THE underground wire question is one of interest to every municipality and every company interested in electrical transmission of news or communication of any kind. Anything progressive and practical in the line of conduits for underground wire systems is of importance. Herewith are produced illustrations of a new form of conduit, of which Mr. Samuel H. Weimer, of Boston, Pa., is the inventor.

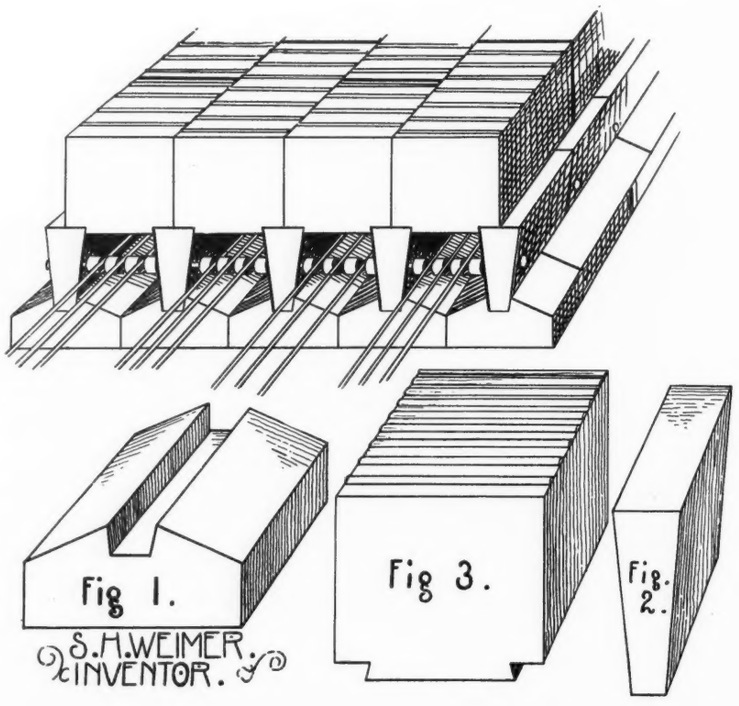
The system is formed by three figures: Fig. 1, the base; Fig. 2, the side or upright; Fig. 3, the cover or top. The floor of the system is composed of sections of Fig. 1. These are joined with cement. The side pieces, Fig. 2, are put in the groove in Fig. 1, bolts are put through and the uprights rigidly connected. The wires, or cables, as the case may be, are then strung in place and the covering, which also constitutes the paving of the portion of street occupied by the system, is put down. As will readily be seen, any portion of the system can be opened by simply removing the cap pieces, and repairs made. The conduits can also be placed underground at any desired length.

Single conduits, or with but one chamber, can also be made as shown by the second illustration. For these single conduits the sections are made in the requisite sizes. Lines of this kind can be made from four inches to six feet square to accommodate any number of wires, cables or steam pipe as the case may be, or the conduits can be utilized as sewers. For the single conduits the covering is of less thickness than for the combination one, being designed mainly for use along railroads, through the country, or in tunnels, or mines and being placed underground.

The estimated cost of constructing a system of this kind is $2.50 per square yard where the heaviest traffic is about $1,250 per square yard. For single conduits, size three feet high by three feet wide, 60 cents per linear yard.

The material from which the blocks are made is vitrified clay. It is fireproof, waterproof and windproof. The sections can be made in any brick yard when the proper dies have been secured. For use in streets where the cap pieces constitute the paving for the street, the sections are made in regular brick size. Wires placed in this conduit need not be insulated.

Mr. Weimer is making arrangements to lay a section of his conduit on a vacant lot or in one of the streets in McKeesport to demonstrate its practicability. The system is attracting attention and is likely to be tested in the near future by telephone or telegraph companies. Patents have been applied for.



MUNICIPAL MATTERS DETERMINED IN COURT

Contracts Must Go to Lowest Bidder—City Cannot Engage in Saloon Business - Rights of Steam Roller—Street Railway Not Required to Repave

COST OF SEWERAGE SYSTEM

THE sewerage assessment plan in use at Brockton, Mass., has been sustained by the United States Supreme Court, affirming a decision of the Superior Court of Massachusetts. The total cost of the system, including the receiving reservoir, pumping plant, filter beds, etc., is paid, one-fourth by the city at large, one-fourth by the abutting property on a combined area and frontage basis, and one-half in quarterly rentals by the users of the sewers.

CITY CANNOT ENGAGE IN SALOON BUSINESS

THE Supreme Court of Georgia has held, in a recent case, that a provision of the Legislature that the municipal authorities of a city "shall have the power and authority to regulate and control the sale (therein) of spirituous and malt liquors, wine and ciders for medicinal, mechanical and sacramental purposes only," does not permit such authorities to embark the city on its own account in the business of buying and selling spirituous or other malt liquors.

PENALTY FOR FAILURE TO FURNISH GAS

THE New York Court of Appeals has held, recently, that when an action has been commenced against a gas company for the statutory penalty of $5 a day for its failure to furnish gas after application has been made for the same, the applicant must renew his application before he can begin a second action for continued failure to supply gas. The plaintiff, however, is not deprived of his right to recover the penalty because he makes arrangements with another of the tenants in the house to supply him with gas.

RIGHTS OF A STEAM ROLLER

IN a recent case, the Supreme Court of the United States held that the question of negligence or no negligence is one of law for the Court where but one inference can reasonably be drawn from the evidence. The fact that a horse became frightened at a steam roller standing by the side of a street, having been there for two days without any change in its usual appearance, does not present a case of negligence for the jury. No other notice of the presence of a steam roller on the street is needed than a view of the said roller in ample time to avoid it.

CONTRACTS MUST GO TO THE LOWEST BIDDER

JUDGE KRUSE, of Buffalo, has decided in the case of the property owners of Krettner street that they cannot designate a certain kind of brick for paving the street, but must accept the cheapest kind. He assumes that all brick is of the same quality. The property owners asked for a certain kind of brick and their request was granted by the Common Council, but the contractor making the lowest bid brought suit to set aside the award on the ground that the charter requires that all contracts shall go to the lowest responsible bidder, and the Court has sustained him.

NO EXTRA PAY

JUDGE SULZBERGER, of the Court of Common Pleas, Philadelphia, Pa., has directed judgment for the city in the suit brought by ninety-five assessors to get extra pay for the enrollment of school children during the year 1897. The plaintiffs averred that the work required two days beyond the limit for making their regular assessment, and they wanted pay at the rate of $2.75 per day. The city held that the receipts signed by the assessors for their regular pay stipulated that that amount was for "the registration of voters and the enumeration of school children." The Court sustained the contention and entered judgment for the city.

STREET RAILWAY NOT REQUIRED TO REPAVE

IN the case of the city of Hamilton, Canada, against the Hamilton Street Railway, Judge Snider has decided in the favor of the company. The case was brought to determine the liability of the railway company to lay tar macadam between its tracks and two feet on either side of its outer rails. The old pavement was of block and the Court held that as the old blocks could not be used again, any other pavement, such as tar macadam, would be new pavement and the company was not required to lay new pavement betwen its tracks. The provision of the company's charter was that it should keep in repair the pavement that the city put down and the word "repair" could not be applied to this work.

POLICE MUST BE RESIDENTS OF THE CITY

JUDGE COLEMAN, in the Circuit Court of Birmingham, Ala., has rendered a decision that the board of police commissioners cannot employ non-resident officers on the local force. The decision is based on the ordinance which states that "all city officers now and hereafter provided for must be residents and qualified electors of the city." Although the legislative body of the commonwealth has the power to confer on the city the right to select non-residents and even residents of other corporations to act as officers, and although, without direct legislative authority, non-residents might discharge the functions of officers in the city, such power conferred by the legislature should be clear and specified, but such special power does not now exist.

CAN LAY DOUBLE TRACKS

IT has been decided by the Supreme Court of Georgia that a street car company, which has acquired the lines of two other companies, may, when authorized by its charter and with the consent of the city authorities, connect the lines acquired by laying its tracks upon such portion of a street as may be necessary to make the connection. A company cannot be enjoined from laying its tracks along a certain street at the instance of one claiming to have an interest in a line of street railway in another street on the ground that the construction of the new line may operate as an abandonment of the line in which he is interested. If the authorities of a city consent that the streets of a city may be so used, the general power in the charter of a railway company to construct a street railway authorizes the construction of double tracks in the streets.

STREET CONSTRUCTION NON-ASSESSABLE

THE Court of Appeals of Kentucky has held that in an action by a contractor to enforce a lien for the cost of a street improvement the fact that the defendant had been damaged by a change in the grade of the street does not constitute a valid defense, although no attempt was made to fix the damage before the injury was done. A statute providing for the original construction of streets at the cost of the abutting property owners applies only to the ordinary construction of such streets and, consequently, the abutting property cannot be charged with the cost of construction when such cost is increased by building the street under the tracks of a railroad, as the city must bear that burden. Where a contract for street improvement requires a deposit of 10 per cent. of the original contract price to secure only such repairs as may be necessary by reason of defective work or material, the whole cost must be borne by the property owners and the city cannot be made to pay 10 per cent. of the cost.

BOOKS AND PERIODICALS UPON MUNICIPAL TOPICS

CRAM'S ATLAS OF THE WORLD

EVERY city hall in the country should be equipped with an up-to-date atlas. The experience of the multitude has demonstrated that there is none better than the one which has been so long and favorably known in the United States—"Cram's Atlas of the World."

This atlas is not a mere collection of maps, but in addition to maps it contains an immense amount of encyclopædic matter, a complete gazetteer of the world, a work of curious and instructive diagrams giving life and meaning to social and economical statistics which by themselves the mind alone is unable to grasp.

The price of this invaluable book of reference will be advanced after the present edition is exhausted. Address all inquiries for the terms, price, etc., to Geo. F. Cram, 130 Fulton street, New York City; or, to 61 Plymouth Place, Chicago, Ill.

PERIODICALS

City officials who wish to know about the failure of asphalt pavements in Buffalo, N. Y., can do so by sending five cents to James Malcolm, care "The Courier," Buffalo, N. Y., who will mail a copy of "*A Brief History of Asphalt Pavements in Buffalo.*" It is a 24-page illustrated pamphlet, which shows up the subject in a most thorough manner.

With the issue of July 8th, the *State*, of Columbia, S. C., published a supplement called the "Industrial Art Edition." There are several good features. Among others are accounts of the state and municipal governments and sketches of the state officials. Illustrations are numerous and the advertising department considerably in evidence.

Sewage Purification: the Glasgow Scheme. The Sanitary Journal, June, 1901.

Sewage Disposal. R. S. Lea, Ma. E. M. Can. Soc. C. E. *The Canadian Engineer,* April and June, 1901. Price, $1.00 per year.

The Workingman's House; Its Possibilities as a Home, by W. Leslie Mackenzie, M. A., M. D. First paper in *The Sanitary Journal,* April, 1901.

Franchise Legislation in Missouri. Relates to the laws passed by the Legislature and the promises of the two parties, Republican and Democratic. By Fred L. Paxton. *Annals of the American Academy of Political and Social Science,* May, 1901.

Relation of the State Municipalities in Rhode Island. By Sidney A. Sherman. *Annals of the American Academy of Political and Social Science,* May, 1901.

Municipal Government. Short articles on the governments of American and foreign cities. *Annals of the American Academy of Political and Social Science,* May, 1901.

Charity Organizations and Relief Societies. The relation of charitable societies to relief societies and relief giving. By Charles M. Hubbard. *American Journal of Sociology,* May, 1901. Price, $2.00 a year; 35 cents a copy.

Secrets of Tammany's Success. A thirteen-page article by Gustavus Myers. *The Forum,* June, 1901. Price, $3.00 a year; 35 cents a copy.

The Public Library and the Public School. An experiment to bring them into coöperation and how it resulted. By George Iles. *World's Work.* New York, May, 1901.

The National Cash Register Company's Experiment. By F. A. Halsey in *American Machinist,* June 20, 1901. Price, $4.00 per year; 8 cents a copy.

Experiments on Flow of Water in Pipes. A 192-page paper to be presented by Gardner S. Williams, Clarence W. Hubbell and George H. Fenkell before the American Society of Civil Engineers in September, 1901. *Proceedings American Society of Civil Engineers,* May, 1901.

Municipal Progress in England and America. Editorial in *The Arena,* June, 1901. $2.50 per annum; 25 cents a copy.

Municipal Housing of the Poor. Editorial in *The Arena,* July, 1901. $2.50 per annum; 25 cents a copy. Also *The Fountain-Head of Municipal Corruption.*

The Bacteria Beds of Modern Sanitation. A five-page article by Eliza Priestley in *The Eclectic Magazine* for July, 1901. $3.00 a year; 25 cents a copy.

Some Co-operative Men and Things in England. Eleven-page article by Nicholas P. Gilman, editor of the *New World,* in *Gunton's Magazine,* May, 1901. $2.00 a year; 20 cents a copy.

Municipal Art in Paris. An eight-page article by Charles Mulford Robinson in *Harper's Magazine,* July, 1901.

The Good Roads Train. An article by Earl Mayo in *The World's Work,* July, 1901. $3.00 a year; 25 cents a copy.

Police Administration. Twenty-five-page article by J. A. Fairlie in *Political Science Quarterly,* March, 1901. $3.00 a year.

Fire Protection in Europe. By Edwin O. Sachs, in *Insurance Engineering,* July, 1901. Price, $3 a year; 25 cents a copy.

Sanitation and Yellow Fever in Havana. Beginning of a report on the subject by Major V. Havard, Chief Surgeon, U. S. A., to the Adjutant General of the United States. *The Sanitarian,* July, 1901. Price, $4 a year; 35 cents a copy.

Insects as Disseminators of Disease. Charles W. Stiles, Ph. D., Zoologist U. S. Bureau of Animal Industry. *The Sanitarian,* July, 1901.

Utilitarian Principles of Taxation and Their Relation to Altruism. R. S. Guernsey in *The Sanitarian,* July, 1901.

Cosmopolitan Health Studies. F. S. Oswald, M. D. *The Sanitarian,* July, 1901.

Vital Statistics and Regulations for the Disposal of the Dead. The Illinois Law. *The Sanitarian,* July, 1901.

Disinfection of Stables. Short article by Herman Wellner, M. D., D. V. S., in *Public Health Record,* July, 1901. Price, $1 a year; 10 cents a copy.

The School-Sink in Tenement Houses. First portion of an article by John Sullivan, Sanitary Inspector, New York. *Public Health Record,* July, 1901.

A Short Treatise on City Hospitals. Lowell A. Lamoreaux in *The National Hospital Record,* July, 1901. Price, $1 a year.

London Hospitals of To-day. The National Hospital Record, July, 1901.

The Corrupting Power of Public Patronage. Four-page article by Oscar W. Underwood in *The Forum,* July, 1901. Price, $3 a year; 35 cents a copy.

The Movement for a Shorter Working-Day. Five pages, by W. MacArthur, in *The Forum,* July, 1901.

Certain Features in School Hygiene. Seven-page article by R. Clark, in *The Forum,* July, 1901.

The Nile Reservoirs. John Ward, F. S. A., in *Cassier's Magazine* New York, August, 1901. Price, $3 a year; 25 cents a number.

Commercial Education for Engineers. Short article by L. S. Randolph, Mem. Am. Soc. C. E., in *Cassier's Magazine* for August, 1901.

Public Scales in Iowa Cities. Midland Municipalities. Marshalltown, Ia., June, 1901. $1 a year; 10 cents a copy.

Insects as Carriers of Disease. How flies and other insects spread disease. Smith Ely Jelliffe, M. D., Ph. D., in *Munsey's Magazine.* New York, August, 1901. $1 a year; 10 cents a copy.

A Well-Governed American Municipality. Short article by Henry B. F. Macfarland in *Everybody's Magazine.* New York, August, 1901. $1 a year; 10 cents a copy.

Unprotected Structural Steel Under Fire Test. Edwin O. Sachs in *Insurance Engineering.* New York, August, 1901. Price $3 a year; 25 cents a copy.

Transportation Franchises Always the Property of Sovereignty. A fourteen-page article by Frank S. Monnett in *The Arena.* New York, August, 1901. Price $2.50 a year.

MUNICIPAL AND OTHER REPORTS

ANNUAL reports have been received from the following places: Massillon, O., 1900-1901; Quincy, Mass., 1900; Chelsea, Mass., 1900; Elgin, Ill., 1900; Little Rock, Ark., 1900; Jackson, Mich., 1900; Columbus, Ga., 1900; Davenport, Ia., 1900; Alliance, O., 1900; the report from Fort Wayne, Ind., for 1900, is well bound in cloth and has many illustrations. Municipal registers came from the cities of Pittsfield and Springfield, Mass. Reports from foreign cities that have come to hand are from Yarmouth, N. S., 1900; Vancouver, B. C., 1900; Bradford, Eng., 1900; Moncton, N. B., 1900; Dundee, Scot., 1899-1900; Berlin, Ger., 1898-1899; Geneva, Switzerland, 1900; Tunstall Urban District Council, Eng., 1900.

Mr. Herman Myers, Mayor of Savannah, Ga., sends us his annual report for 1900. It is cloth bound and illustrated with many cuts of the aldermen and city officials. The reports of all the departments are included and attached to the report, and bound with it, is a history of the city government of Savannah from 1790 to 1901 compiled from the official records by Thomas Gamble, Jr., secretary to the mayor. It is a work of 546 pages, illustrated, and forms a book that would be a valuable addition to any library. Savannah has set an example that might be well followed by other cities both large and small.

Annual financial statements that have come to hand are: St. John, N. B., for 1898, 1899 and 1900, with an appendix containing the report of the Director of Public Works, etc.; Sydney, C. B., report of the receipts and expenditures for 1900; Charlottetown, Prince Edward's Isle, accounts and annual reports of the departments for 1900; Liverpool, England, treasurer's accounts, etc., for 1899; Borough of Falmouth, England, 1900, with the accounts of the school board for 1900; Sheffield, England, statement of accounts of the Electrical Supply Department, 1901; Annual Accounts of Hull, England, for 1900-1901; annual reports of the city clerk and city treasurer of Newburgh, N. Y.; annual report of the city auditor, Chelsea, Mass., 1900; receipts and expenses of Geneva, Switz., for 1900.

Several reports have been received showing the conditions of the health of various communities: Report of the State Board of Health of Ohio for 1899. It contains 827 pages, and Appendix I. has thirty-two plates showing the bacteria, alkalinity, nitrates, oxygen, etc., in the water supply of the Muskingum River and its tributaries; report of the State Board of Health of Ohio on the rivers of Ohio, reprinted from the annual report, 1900; report of the Medical Officer of Health, Newcastle-on-Tyne, England, 1901; report of the Medical Officer of Health of Liverpool, England, 1900, with the report on the sanitary administration, with maps, charts and illustrations of the old and new tenement houses; report of the Medical Officer of Health of Edinburgh for 1899; the annual report on the health of Sheffield, England, for 1899; report on the Sanitary and Market Departments of Edinburgh, Scotland, for 1900; report of the Board of Health, Malden, Mass., 1900.

Police reports received are from Newcastle-on-Tyne, England, 1900; Liverpool, England, 1900; Edinburgh, Scotland, 1900.

Park reports have come to us from Philadelphia, Pa.; Des Moines, Ia.; St. Paul, Minn., and the City Parks Association of Philadelphia.

Reports on engineering matters received are as follows; Newcastle-on-Tyne, England, 1900; Burgh Engineer of Edinburgh, Scotland, 1899, with the plans of the corporation housing schemes. Also the report of the Roads Department for May, 1899, to May, 1900; the annual statement of the street and sewer departments of Wilmington, Delaware, for 1901; report of the Water Commissioners of Atlantic City, N. J., for 1899-1900; reports of the City Clerk and the Superintendent of the Water Works of Lorain, Ohio, for 1900-1901; reports of the Sewer and Water Departments of Oberlin, Ohio, for 1899, 1900 and 1901; report of the Bureau of Water, Albany, N. Y., for the year ending September, 1900; annual report of the Water and Gas Engineer of Hull, England, 1900; report of the Street Department of Waltham, Mass., 1900.

Reports of the public libraries of Newcastle-on-Tyne, England, for 1899-1900, of Liverpool, 1900, and of Falmouth, for 1900, have reached us.

We have the report of the Superintendent of Cleansing and Public Baths of Sheffield, England, for 1899-1900, and the Firemaster's report of the Edinburgh, Scotland, Fire Brigade for 1900.

Reports on miscellaneous subjects were received as follows: Report of the Chief Inspector of Weights, Measures and Gas Meters of Newcastle-on-Tyne, England, for 1900; Notes on Municipal Work, a report for the year 1896 to 1899 by the Lord Provost of Glasgow, Scotland; rules, orders and by-laws for the sanitary government of Windsor, N. S., for 1900; annual report for 1900 of the Chamber of Commerce, Falmouth, England; the Year Book of Information for the Council of Sheffield, England, 1901; Handbook of the Council of Belfast, Ireland, for 1901-1902; twelfth annual report of the Board of Trade, Springfield, Mass., 1901; charter and ordinances of the city of San Antonio, Tex., 1899; Official Congressional Directory, 1901.

ANNUAL messages of the following mayors have been received: Harry G. Sargent, Concord, N. H.; William F. Davis, Woburn, Mass.; H. S. Rowe, Portland, Ore.

William H. Hill, president of the village of Lestershire, N. Y., presented us with a copy of his annual message, containing numerous pictures of the officials and big men of the village.

We received the following addresses: "Miscarriage of Municipal Sanitation," by Ernest Wende, M. D., Health Commissioner of Buffalo, N. Y., and "Municipal Lighting in New Bedford, Mass.," an argument by G. W. Anderson for legislation authorizing New Bedford to establish a municipal lighting plant.

Several reports have been received, showing the park conditions in Trenton, N. J.; Providence, R. I.; Wilmington, Del.; San Francisco, Cal.; Minneapolis, Minn.; St. Paul, Minn.; Buffalo, N. Y.; Cincinnati, O., 1891 to 1899.

Two reports from city auditors were received from Kingston, Can., and Windsor, Can.

Water department reports came in from Windsor, Can.; Fort Worth, Tex., and Danville, Ill.

Reports on municipal lighting were received from Hingham, Mass.; Detroit, Mich.; Fort Worth, Tex., and Danville, Ill. That of Detroit is illustrated with cuts and a plan of the city showing the location of street lights.

W. M. Leftwich, Jr., city engineer of Nashville, Tenn., sent us a copy of the annual report of his city. Many illustrations show the work of various departments and the faces of the city officers.

The annual reports of Portland, Ore., and Somerville, Mass., were received. Both are neatly bound in black cloth with gilt lettering, and that of Somerville has many cuts, drawings and maps. The report of Fort Wayne, Ind., was also forwarded to us.

Municipal reports of the city of Mexico were forwarded to us for the years 1891 to 1900.

Handbooks and manuals were received from Alliance, O.; Woburn, Mass., and Philadelphia, Pa.

Reports on miscellaneous subjects were received as follows: Report on receipts and expenditures from Windsor, N. S.; report of the Board of Public Works, Woburn, Mass.; Board of Health report, Dunkirk, N. Y.; report of Street Commissioner, Somerville, Mass.; report of Police Board of Fall River, Mass.: abstracts of the accounts of the burgh of Dumfermline, Scotland.

COMPARATIVE BIDS FOR CONSTRUCTION WORK

SEWAGE DISPOSAL PLANT

HADDONFIELD, N. J.—Bids for a sewage disposal plant were received as follows:

	Earth excavation, 12,000 cu. yds.	Brick masonry, 220 cu. yds.	Concrete, 30 cu. yds.	Vitrified pipe. 15-inch, 550 lin. ft.	Vitrified pipe. 10-inch, 550 lin. ft.	6-in. tile, 2,500 lin. ft.	T branches, 10 x 15-in., 8 each.	T branches, 10 x 6-in., 30 each.	Iron plates, 8 each.
John Quinlan	$.25	$8.00	$5 00	$.50	$.30	$.15	$1.50	$1.75	$7.00
A. Costa	.17	9.00	6.00	.55	.40	.07	2.00	2 00	2.00
J. H. Hurley	.30	9.00	5.00	.50	.35	.20	1.50	2.30	6.00
Herr & Clark	.18	10.00	6.50	.65	.40	.15	1.25	.70	8.00
David Peoples	.40	9.00	7.00	1.25	1.00	.50	2.00	2.25	20.00
J. I. Hillpot	.35	8.50	7.00	.60	.35	.21	1.70	1.00	2.00

BRICK PAVING

PARIS, ILL.—Bids for 11,090 square yards of brick paving were submitted as follows:

	J. F. Bretz & Son.	Thompson & Case.	Morissey & Porter.	M. A. Talbot.	Wolf, Manpin & Curdie.	D. W. Norton & Co.	J. E. Vorhees & Co.
Excavating, 4,360 cu. yds	$.30	$.30	$.25	$.27	$.25	$.29	$.35
Limestone curb, 2,750 ft	.52	.45	.51	.52	.45	.53	.52
Combined curb and gutter, 2,170 ft	.60	.55	.62	.63	.75	.64	.63
Curb reset, 650 ft	.10	.15	.11	.11	.10	.10	.12
Brick pavement on concrete foundation	1.38	1.34	1.30	1.40	1.40	1.33	1.40
Cement filler	.10	.12	1.10	.13	.10	.15	.12
Storm inlets, 21	10.00	15.00	15.00	11.00	10.00	12.00	14.00

WATER PIPE

SALT LAKE CITY, UTAH.—Bids for constructing the City Creek pipe line were received as follows:

Work and materials.	Quantities.	P. J. Moran. Price.	P. J. Moran. Amount.	Keifer & Rush. Price.	Keifer & Rush. Amount.	N. P. Glann C. Co. Price.	N. P. Glann C. Co. Amount.
Excavating	9,500 cu. yds.	$.40	$3,800.00	$.45	$4,275.00	$.56	$5,320.00
Backfilling	6,500 cu. yds.	.15	975.00	.15	975.00	.10	650.00
Furnishing and laying cast-iron pipe:							
24-inch	5,920 lin. ft.	5.60	33,152.00	5.86	34,691.20	5.69	33,684.80
20-inch	845 lin. ft.	4.50	3,802.50	4.675	3,950.38	4.65	3,929.25
16-inch	790 lin ft.	3.30	2,607.00	3.305	2,610.95	3.35	2,646.50
Valves:							
24-inch	2	300.00	600.00	318.00	836.00	300.00	600.00
20-inch	1	168.00	168.00	200.00	200.00	200.00	200.00
16-inch	2	87.00	174.00	107.00	214.00	100.00	200.00
Special castings	6,000 lbs.	.04	240 00	.04	240.00	.04	240.00
Brick masonry	30 cu. yds.	10.00	300.00	9.43	282.90	11.00	330.00
Concrete masonry	30 cu. yds.	8 50	255.00	9.07	272.10	10.00	300.00
Cut stone masonry	30 cu. yds.	25.00	750.00	24.75	742.50	20.00	600.00
Cement plaster	500 sq. yds.	.33	165.00	.45	225.00	.50	250.00
Totals			$46,988.50		$49,315.03		$48,950.55

RESERVOIR

NEWARK, N. J.—Proposals for work on the Cedar Grove Reservoir were submitted as follows:

		National Contracting Co., 11 B'way, New York.	Bernard J. Sullivan, 10 W. Park St., Newark.	Stewart & Abbott, Times Bldg., New York.	T. A. Gillespie Co., 71 B'way. New York.
Clearing and grubbing	61 acres.	$75.00	$50.00	$76.20	$200.00
Earth excavation, 0 to 15 ft	145,000 cu. yds.	.35	.50	.42	.40
Earth excavation, 15 to 30 ft	11,700 cu. yds.	.70	.90	.63½	1 00
Earth excavation, below 30 ft	3,100 cu. yds.	1.00	1.00	1.00	1.90
Rock excavation, under dams	4,200 cu. yds.	3.00	2.00	4.45	3.15
Rock excavation, below 10 ft	3,800 cu. yds.	4 00	2.00	2.85	2.10
Rock excavation, elsewhere	5,400 cu. yds.	2.00	1.50	.90	1.40
Borrowed earth	400,000 cu. yds.	.45	.35	.241	.30
Clay puddle	10,700 cu. yds.	1.50	1.00	.95	.85
Sodding	5,000 sq. yds.	.60	.25	.28	.15
Seeding	28 acres.	20.00	25.00	12.70	42.00
Sheet piling	20 M. ft.	50.00	50.00	50.00	65.00
Rosendale concrete, 5:2:1	38,100 cu. yds.	4.90	4.75	4.00	4.75
Portland concrete, 5:2:1	7,100 cu. yds.	7.00	6.00	6.20	8.25
Expanded metal	165,000 sq. ft.	.05	.05	.05	.04½
Granite rubble masonry	2,700 cu. yds.	8.75	40.00	19.00	10.00
Rubble masonry, local stone	350 cu. yds.	5.00	4.00	4.45	4.20
Granite facing masonry	145 cu. yds.	22.00	44.00	34.30	37.00
Granite dimension masonry	130 cu. yds.	50.00	53.00	42.00	55.00
Hammered dressing stone	750 sq. ft.	.80	1.00	.65	.55
Granite paving	60 sq. yds.	3.00	2.50	2.54	2.65
Paving brick masonry	100 cu. yds.	30.00	14.00	11.43	12.00
Granolithic flooring	94 sq. yds.	1.80	1.20	1.60	1.50
Dry wall	100 cu. yds.	4.00	2.25	2.54	3.50
Slope paving	5,600 sq. yds.	3.00	1.50	1.58	1.10
Rip-rap	10,300 cu. yds.	2.00	.75	1.58	.70
Laying 60-in. cast-iron pipe	3,400 lin. ft.	2.75	4.00	2.20	2.80
Laying 48-in. cast-iron pipe	600 lin. ft.	2.00	2.00	1.55	2.10
Laying 30-in. cast-iron pipe	50 lin. ft.	1.25	1.00	1.25	1.40
Laying 16-in. castiron pipe	150 lin. ft.	.65	.40	.95	.70
Laying 12-in. cast-iron pipe	180 lin. ft.	.50	.35	.75	.35
Laying 8-in. cast-iron pipe	50 lin. ft.	.35	.30	.50	.35
Laying 6-in. cast-iron pipe	100 lin. ft.	.25	.25	.40	.35
Furnishing and setting 48-in. valve	2 each.	1,050.00	1,000.00	1,070.00	950.00
Furnishing and setting 48-in. valve	1 hy. cyl.	1,400.00	1,300.00	1,350.00	1,200.00
Furnishing and setting 42-in. valve	1	815.00	800.00	840.00	700.00
Furnishing and setting 30-in. valve	2 each	320.00	325.00	345.00	300.00
Furnishing and setting 16-in. valve	4 each	95.00	100.00	105.00	100.00
Furnishing and setting 12-in. valve	3 each	38.00	45.00	43.00	50.00
Furnishing and setting 8-in. valve	4 each	60.00	65.00	65.00	60.00
Iron castings	96,000 lbs.	.08	.04	.04¾	.05
Structural steel	12,000 lbs.	.04	.04	.06¼	.05
Wrought iron	1,000 lbs.	.08	.10	.06¼	.05
Furnishing and laying 6-in. tile pipe	600 lin. ft.	.60	.50	.19	.50
Furnishing and laying 12-in. tile pipe	100 lin. ft.	.80	1.00	.64	.60
Furnishing and laying 24-in. tile pipe	100 lin ft.	2.00	1.50	1.60	2.50
Furnishing and laying 30-in. tile pipe	100 lin. ft.	3.00	2.00	3.15	3.50
Telford pavement	10,850 sq. yds.	1.10	.85	.63	.90
Walks of screenings	12,000 sq. yds.	.25	.35	.19	.20
Cobble paving	4,100 sq. yds.	.75	.50	.63	.70
Fence	12,000 lin. ft.	.65	.75	.65	1.00
Bluestone curbing	12,000 lin. ft.	.70	.50	.57	.60
Sluice gates		16,000.00	16,000.00	18,500.00	15,500 00
Bridge		600.00	642.00	660.00	625.00
Total		$703,801.42	$713,030.78	$581,217.24	$625,504.60

GAS STATISTICS IN AMERICAN CITIES

Including Those Having a Population of From 5,000 to 50,000 Given in Order of Population

City.	Population of city.	Population of district supplied.	Annual output in million cu. ft.	Number of meters.	Price. Light. Gross.	Light. Net.	Fuel. Gross.	Fuel. Net.	Candle-power.	Per cent. sold for fuel.	Number public lamps.	Price per year.	Hours per year lighted.
Yonkers, N. Y.	47,931	105,000	421	13,797	$1.70 to 1.20	$1.50 to 1.20	$1.35 to 1.20	$1.25 to 1.20	22 to 26	30	3,429	* $18 to $28	4,000
Norfolk, Va.	46,624	46,000	96	3,400	1.40	1.20	1.20	1.00	22	17.2			
Waterbury, Conn.	45,859	46,000	120	5,850	1.50	1.40		1.25 to 1.15	26	15	5	20.00	
Holyoke, Mass.	45,712	45,700	86	3,024	1.50	1.30	1.35	1.25	19		22	‡.80	1,241
Ft. Wayne, Ind.	45,115	50,000	23	1,300	1.35	1.25			24				
Youngstown, O.	44,885	50,000	30	2,000	1.10				17				
Houston, Tex.	44,633	55,000	35	y 1,200	1.80		1.80		18	20			
Covington, Ky.	42,938	50,000	73	2,500	1.10	1.00	1.00	.90	20	12	676	|| 1.00	2,200
Akron, O.	42,728	40,000	50	y 2,000	1.25	1.25		x.75	23	30			
Dallas, Tex.	42,638	42,000	30	1,800	1.60	1.55	1.40	1.35	19	50			
Saginaw, Mich.	42,345	28,000	41	2,300	1.30 to 1.60	1.10 to 1.40	1.00		19.5	33			
Lancaster, Pa.	41,459	46,000	80	4,864	2.00	1.50		1.00	22	16	265	* 24.00	4,000
Lincoln, Neb.	40,169	45,000	60	3,300	1.75	1.50	1.50	1.25	19	40			
Brockton, Mass.	40,063	40,000	46	1,800	1.70	1.40			18		150		†
Binghamton, N. Y.	39,647	43,000	70	3,300	1.60	1.40	1.60	1.40	20	45	146		4,100
Augusta, Ga.	39,441	49,000	40	1,800	1.75	1.50	1.25	1.00	17.5	20			
Pawtucket, R. I.	39,231	50,000	131	6,575	1.50	1.40	1.25	1.15	22	17	158	12.00	† 1,445
Altoona, Pa.	38,973	45,000	91	y 4,872	1.20	1.20	1.20	1.20	18.5	25			All n't.
Wheeling, W. Va.	38,878	40,000	135	4,475	1.00	.75	¶.20		16		26		
Mobile, Ala.	38,469	38,500	20		2.00		1.50		20	15			
Birmingham, Ala.	38,415	35,000	56	1,500	1.65	1.48	1.00	1.00	18	20			
Little Rock, Ark.	38,307	40,000	50	2,500	1.90	1.71		1.49	22	33			
Springfield, O.	38,253	40,000	60	1,922	1.10	1.00			17		254	* 20.00	4,000
Galveston, Tex.	37,789	55,000	30	1,400		2.00		1.50	18	34			
Tacoma, Wash	37,714	21,000	29	1,902	2.00	1.75	1.75	1.75	18.2	37			
Haverhill, Mass.	37,175	35,000	116	4,836	1.10	1.00	1.10	1.00	24.4				2,250
Terre Haute, Ind.	36,673	45,000	110	3,300	1.00	.80	.75		20	60			
Dubuque, Ia.	36,297	36,297	60	2,669	1.50	1.25	1.25	1.00	20	43			
Quincy, Ill.	36,252	37,800	70		1.75	1.35 to 1.50	1.25	1.00	20	37			
South Bend, Ind.	35,999	36,000	73	2,700	1.50	1.00 to 1.20	1.50	1.00 to 1.20	23	55			
Salem, Mass.	35,956	45,000	63	3,500	1.25	1.00	1.25	1.00	18.3		13		
Johnstown, Pa.	35,936	40,000	70	1,850	1.40	1.20	1.40	1.00	22	12	13	|| 1.20	†
Elmira, N. Y.	35,672	40,000	37	1,900	1.75	1.60	1.25	1.25	20	11			
Allentown, Pa.	35,416	35,000	38	3,655	1.80	1.60		1.40	24	16			
Davenport, Ia.	35,254	40,000	33	2,000	1.35	1.25	1.35	1.25	20	33			
McKeesport, Pa.	34,227	39,000	12	500	1.00	.90			20	30			
Springfield, Ill.	34,159	40,000		3,800	1.20	1.00	1.00		22	30			
Chelsea, Mass.	34,072	35,000	39	2,500	1.50	1.35	1.50	1.35	18	10			
Chester, Pa.	33,988	33,000	40		1.10	1.00	1.10	1.00	22	33			
York, Pa.	33,708	37,000	45	3,500	1.60		1.00		30	60			
Malden, Mass.	33,664	90,000	100	5,100	1.40	1.20	1.40	1.20	18	33			
Topeka, Kan.	33,608	15,000	35	1,400	1.50	1.50	1.50	1.50	20	33	11	20.00	3,700
Newton, Mass.	33,587	35,000	102	5,000	1.40	1.25	1.40	1.25	18	20	957	* 16.00	2,200
Sioux City, Ia.	33,111	33,111	100	4,457	1.40	1.30	1.50	1.30	24	60			
Knoxville, Tenn.	32,637	40,000	58	2,500	1.10	1.00	1.10	1.00	20	25.5			
Fitchburg, Mass.	31,531	32,000	30	18,000	1.60	1.45	1.60	1.45	18		18	20.00	4,500
Superior, Wis.	31,091	31,000	20	1,300	2.00	1.75		1.25	20 to 22	33			
Rockford, Ill.	31,051	31,000	51	1,971	1.35	1.25	1.35	1.25	17	43			
Taunton, Mass.	31,036	31,000	55	1,947	1.30				18		72	|| 1.30	1,800
Canton, O.	30,667	30,667	34	628	1.20	1.00	1.20	1.00	16		50		3,090
Butte, Mont.	30,470	25,000	25	714	2.50	2.00	2.50	2.00	18	40			
Montgomery, Ala.	30,346	40,000	25	1,500	2.25	1.80	1.50	1.20	18	35			
Auburn, N. Y.	30,345	30,000		2,000		1.20		1.20	20	30			
Chattanooga, Tenn.	30,154	32,000	48	2,400	1.40	1.00 to 1.30		.90 to 1 05	18	27.2			
East St. Louis, Ill.	29,655	25,000	21	800	2.00	1.60	1.40		17	50			
Joliet, Ill.	29,353	36,000	65	2,350	1.50	1.25 to 1.00	1.50	1.25 to 1.00	22	35			
Sacramento, Cal.	29,282	22,000	42	2,200		1.75		1.75	20	50			
Racine, Wis.	29,102	25,000	75	3,800	1.40	1.20	1.20	1.00	17	66			
La Crosse, Wis.	28,895	28,800	22	1,065		1.75		1.40	18	40			
Jacksonville, Fla.	28,429	30,000	25	1,000	2.00		2.00	1.50	20	60			
New Castle, Pa.	28,339	30,000	5	200	1.25	1.00	1.25	1.00	20				
Oshkosh, Wis.	28,284	28,832	30	1,600	1.75	1.50	1.25	1.00	18	45			
Woonsocket, R. I.	28,204	28,000	36	1,581	1.60	1.50	1.60	1.50	22	12			
Bay City, Mich.	27,628	18,000	23	1,111	1.30 to 1.70	1.10 to1.50	1.20	1.00	18.5	36			
Fort Worth, Tex.	26,688	25,000	20	1,300	2.00	1.80	2.00	1.33	18	55			
Gloucester, Mass	26,121	30,000	35	1,300	1.50	1.20	1.50	1.20	18	30	100	* 96.00	2,000
Joplin, Mo.	26,023	35,000	40	1,700	1.25		1.25	1.00	18	30			
New Britain, Conn.	25,998	29,000	35	1,100	1.75	1.40	1.25	1.00	18		27	9 00	3,000
Council Bluffs, Ia.	25,802	26,000	33	1,775	1.45	1.45	1.45	1.45	24 to 26	45			
Cedar Rapids, Ia.	25,656	25,000	38	1,800	1.50	1.25	1.50	1.25	22	50			
Easton, Pa.	25,238	50,000	24	1,585	1.50	1.40	1.50	1.40	18	10			
Jackson, Mich.	25,180	25,000	46	2,300	1.20	1.00	1.20	1.00	22	33			
Wichita, Kan.	24,671	24,670	24	1,100	2.00	1.90	1.42	1.42	17	75			
Kingston, N. Y.	24,535	24,500	22	1,378	2.00	1.80	1.75	1.58	22	10	7	* 18 00	3,960
Kalamazoo, Mich.	24,404	24,000	50	2,000	1.34	1.09	1.34	1.09	18	35			
Meriden, Conn.	24,296	25,000	54	2,100	1.65	1.50	1.65	1.50	17.5	20			
North Adams, Mass.	24,200	25,000	54	1,400	1.75	1.58	1.40	1.26	19.6	57			
Aurora, Ill.	24,147	24,147	85	3,200	1.25	1.25 to 1.00	1.25	1.25 to 1.00	21.5	47			
Poughkeepsie, N. Y.	24,029	24,000	50	4,500	1.60	1.50	1.10	1.00	27	26			
z Hamilton, O	23,914	25,000	60	2,582	.80	.80	.80	.80	25	42	207	* 18.00	4,865
Hamilton, O.		26,000	50	750	.80	.80	.80	.80	21	65			
Quincy, Mass.	23,809	25,000	8	481	2.00	2.00	2.00	2.00	18		67	* 20.00	§
Nashua, N. H.	23,898	24,000	42	1,900	1.80	1.40	1.80	1.40	18	25			
Lewiston, Me.	23,761	30,000	37	1,500	1.70	1.60	1.70	1.60	25	10			
Zanesville, O.	23,538	23,000	43	2,394	1.00	1.00	1.00	1.00	18	12	34	12.00	
Waltham, Mass.	23,481	23,000	35	1,590	1.80	1.50	1.80	1.50	18	5	79	* 19.20	1,753
Bloomington, Ill.	23,286	24,000	50	2,500	2.00	1.50	1.25	1.00	18	30			
Macon, Ga.	23,272	35,000	40	1,450	1.50	1.50	1.25	1.25	21	15			
Springfield, Mo	23,267	22,000	16	763	1.75		1.50		17	33			
Burlington, Ia.	23,201	23,200	55	4,060	1.60	1.50		1.00	25	45			
Sheboygan, Wis.	22,962	23,000	16	1,000	1.50	1.35	1.50	1.35	22	20			
Clinton, Ia.	22,698	22,000	40	1,589		1.00 to 1.75		1.00	16	65			
Elgin, Ill.	22,433	23,000	60	1,700	1.30	1.20	1.30	1.20	18	50			
Norristown, Pa.	22,265	27,000	32	1,900	1.30	1.25	1.30	1.25	17.5				4,000
Austin, Tex.	22,258	22,000	15	525		2.37		1.52	20	60			

* Includes repairs, etc. † Lighted by moon scale. \|\| Per 1,000 feet. x Above 1,000 cubic feet. y Number of consumers. z Municipal. § To 12 M. ‡ Per hour. ¶ Natural. (From Brown's Directory of American Gas Companies. By courtesy of the publisher.)

(Continued in October.)

MUNICIPAL BOND SALES FOR AUGUST

Sales Sluggish—Advancing Stock Prices Mean an Increased Loan—Aggregate Sales Larger Than Last Year—Philadelphia 3 Per Cents Advanced to 3½ Per Cent. to Make Them Sell—Large Number of Bonds Declared Illegal

THE movement in municipal bond sales for the month of August has been rather sluggish as was generally expected. The cause is a simple one. Advancing stock prices usually mean an increase in loans and a possible advance in interest rates. Bankers and other capitalists want to have their friends where they can be easily got at, and low interest bearing securities are not desirable. Any cause of advancing interest rates induces the hoarding of money. In spite of this fact the aggregate sale has been a trifle in advance of last year, and is double that of any year in the last five, except that of 1898, when the total amounted to about $26,000,000.

The 3 per cent. bonds which Philadelphia failed to sell in July were advanced to 3½ per cent. and placed on the market in August, selling at a slight premium. New York bond dealers think the price will be advanced as time goes on to 107, or a basis of 3.15 per cent. Owing to the bad management of the city's affairs it is more than likely that the bond dealers will make, in a legitimate way, more than half a million dollars out of the Philadelphia. The Quaker City people seem to be perfectly oblivious that their affairs are managed in a way that is detrimental to the city, or else they do not care. The little city of Hornellsville, N. Y., sold its bonds to a better advantage than did Philadelphia.

A large number of bonds have been declared illegal recently by the attorneys of bidders, and have had to be revoted and readvertised in consequence. Dealers say that this is the result of carelessness on the part of municipal officers whose duty it is to arrange the preliminary steps leading up to the issuance of bonds. The securities of important communities are seldom questioned, because every move made by such public corporations is supervised by competent legal counselors, but in villages and school districts the people seem to "go it blind."

PURCHASER.	PURCHASE.	INT. RATE.	TERM, YEARS.	AMOUNT.	PRICE.
Harris, N. W., & Co., Chicago	Tullahoma, Tenn., Electric Light	4½ per cent.	5—20	$10,000	Par.
Harris, N. W., & Co., Chicago	Tullahoma, Tenn., Water Works	4½ per cent.	5—20	25,000	Par.
Hayes, W. J., & Sons, Cleveland	Milwaukee, Wis., West Sewerage	3½ per cent. s. a.	½—19½ Ser.	50,000	101.830
Harris, N. W., & Co., Chicago	Milwaukee, Wis., Fire Department	3½ per cent. s. a.	1—20 Ser.	50,000	102.200
Joseph E. Gavin, Buffalo, N. Y.	Syracuse, N. Y., Library	3½ per cent. s. a.	1—20 Ser.	38,000	101.945
Joseph E. Gavin, Buffalo, N. Y.	Syracuse, N. Y., School	3½ per cent. s. a.	1—20 Ser.	50,000	101.945
Joseph E. Gavin, Buffalo, N. Y.	Syracuse, N. Y., Fire	3½ per cent. s. a.	1—20 Ser.	42,000	101.945
Lamprecht Bros., Cleveland	Flint, Mich., School	4 per cent. s. a.	5 1-6 Avg.	25,000	101.850
Seasongood & Mayer, Cincinnati	Humboldt, Tenn., Water and Light	4½ per cent. s. a.	15—30 Opt.-Avg.	7,000	101.000
O'Connor & Kahler, New York	Hempstead, N. Y., Water Works	3½ per cent. s. a.	12½ Avg.	50,000	Par.
Feder, Holtzman & Co., Cleveland	Berea, O., Paving	5 per cent. s. a.	7 2-3 Avg.	15,000	101.770
Lamprecht Bros., Cleveland	Hubbard, O., Electric Light	4 per cent. s. a.	9—24 Ser.	8,000	102.100
Kinsella, Thos. L., Painted Post	Erwin, N. Y., Building	4 per cent.	1—11 Ser.	5,500	101.045
Harris, N. W., & Co., Boston	Sanford, Me., School	3½ per cent. s. a.	1—20 Ser.	25,000	102.280
Rollins, E. H., & Sons, San Francisco	Winters, Cal., Water Works	6 per cent. s. a.	1—40 Ser.	17,000	104.000
Hayes, W. J., & Sons, Cleveland	Syracuse, N. Y., Round Top Park	3½ per cent. s. a.	1—20 Ser.	25,000	101.490
Commercial Bank, Local	Lexington, Mo., School	4 per cent.	5—20 Opt.	10,000	101.366
Dick Bros. & Co., N. Y.	Plattsburg, N. Y., Sewer and Street	3½ per cent. s. a.	16¾ Avg.	55,000	102.275
Exall, Henry, Local	Beaumont, Tex., Sewer and Paving	5 per cent. a.	20—40 Opt.	115,000	106.956
First National Bank, Circleville	New Holland, O., Building	6 per cent. s. a.	5¾ Avg.	4,000	111.250
First National Bank, Local	Fostoria, O., Fremont Street Improvement	4 per cent. s. a.	9½ Avg.	17,500	103.478
German National Bank, Cincinnati	Carthage, O., Street Improvement	5 per cent. a.	1—10 Ser.	11,227	103.700
Gibson, Hon. J. G., Local	Utica, N. Y., Library	4 per cent. a.	16 Avg.	165,000	109.250
Hayes, W. J., & Sons, Cleveland	Cohoes, N. Y., City	3½ per cent. s. a.	15½ Avg.	30,916	103.460
Jefferson & Kasson	Morris, Minn., Water Works	5 per cent. s. a.	20	10,000	111.700
McCurdy, R., Local	Youngstown, O., Lane Avenue Sewer	5 per cent. s. a.	1—3 Ser.	300	102.080
McCurdy, R., Local	Youngstown, O., Webb Street Sewer	5 per cent. s. a.	1—3 Ser.	225	102.000
McCurdy, R., Local	Youngstown, O., Grove Street Sewer	5 per cent. s. a.	1—3 Ser.	225	102.000
Springer, Isaac, Pasadena	Stockton, Cal., Sewer	4 per cent. s. a.	1—39 Ser.	50,700	97.040
Stimson, G. A., & Co., Toronto	Kingsville, Ont., School	4½ per cent.	15	4,000	100.875
Estabrook & Co., Boston	Fall River, Mass., School	3½ per cent. s. a.	10	25,000	102.527
Day, R. L., & Co., Boston	Northampton, Mass., Water Supply	3½ per cent. s. a.	1—25 Ser.	200,000	103.180
Farson, D. M., & Co., Chicago	Redwood Falls, Minn., Water Tower	4 per cent. s. a.	20	6,000	100.830
Denison, Prior & Co., Cleveland	Cleveland, O., Intercepting Sewer	4 per cent. s. a.	20	400,000	110.890
Blodget, Merritt & Co., Boston	Watertown, Mass., Notes	3½ per cent.	10	30,000	102.210
Jose, Parker & Co., Boston	Gardner, Mass., Sewer	3½ per cent.	15½ Avg.	21,000	102.726
Estabrook & Co., Boston	Trenton, N. J., Park	3½ per cent.	25	20,000	104.310
Farson, Leach & Co., Chicago	Pontiac, Mich., Water Works Extension	4 per cent. s. a.	18—27 Ser.	50,000	106.284
Brown, Wm., Monroe, Wis.	Elk City, Kan., Gas	5 per cent. s. a.	20	2,000	98.500
Hayes, W. J., & Sons, Cleveland	Syracuse, N. Y., Round Top Park	3½ per cent. s. a.	1—20 Ser.	25,000	101.490
Lindsey, G. N., Local	Chanute, Kan., School	4½ per cent.	20	25,000	100.040
Monroe Bank, Local	Woodsfield, O., Electric Light	5 per cent. s. a.	29 1-3 Avg.	15,000	118.774
Peoples' Savings Bank, Local	Grand Rapids, Mich., Street	4 per cent. s. a.	1—5 Ser.	50,000	101.551
Sherrill, I. W., Poughkeepsie	Saranac Lake, N. Y., Water	3½ per cent. s. a.	5—29 Ser.	50,000	Par.
Sherrill, I. W., Poughkeepsie	Saranac Lake, N. Y., Sidewalk	3½ per cent. s. a.	5—29 Ser	12,500	Par.
Sinking Fund Commissioners	Worcester, Mass., Water	3½ per cent. s. a.	30	150,000	106.800
Sinking Fund Commissioners	Worcester, Mass., Sewer	3½ per cent. s. a.	30	100,000	106.800
Troy Savings Bank	Troy, N. Y., Additional Water Works	3½ per cent. s. a.	12 1-6 Avg.	135,000	103.180
Union National Bank, Mt. Holly	Burlington, N. J., Drainage	4 per cent. s. a.	20	10,000	106.400
Unknown	Wickliffe, Ky., Water Works			10,000	108.250
Lamprecht Bros. Co., Cleveland	Bay City, Mich., Local Improvement	4 per cent. a.	3—4—5	49,500	100.006
Brown Bros. & Co., Philadelphia					
Fisk, Harvey & Sons, Philadelphia	Philadelphia, Pa., Water, Registered	3½ per cent. s. a.	30	9,000,000	100.250
Drexel & Co., Philadelphia					
Dick Bros. & Co., New York	Orange, N. J., Reservoir Improvement	4 per cent. s. a.	23—28 Ser.	90,000	109.820
Exchange Bank, Local					
Albany National Bank, Local	Albany, Ga., Water, Gold	4 per cent. s. a.	30	25,000	Par.
Commercial Bank, Local					
Erick, Beeks, Local	Weatherford, Okla., Water Works	6 per cent.	20	15,000	107.000
First National Bank, Barnesville	Bricelyn, Minn., Water Works	5 per cent. s. a.	10	1,500	102.066
First National Bank, Local	Maryville, Mo., Street	4 per cent. s. a.	5—20 Opt.	15,000	100,533
Frazier, L. W., Detroit	Grosse Pointe, Mich., Highway	4 per cent. s. a.	30	165,000	107.200
Harris, N. W., & Co., New York	Oneonta, N. Y., Paving and Curbing	3½ per cent.	5—29 Ser.	37,500	101.310
O'Connor & Kahler, New York	Schenectady, N. Y., Water	4 per cent. a.	20	15,000	110.109
Thompson, Tenney & Crawford Co., New York	Elmira, N. Y., School	3½ per cent. s .a.	25	25,000	104.079
Tighe, Ambrose	Hendricks, Minn., Water Works	5 per cent. a.	20	9,500	100.536
Denison, Prior & Co., Cleveland	Springfield, O., Water Works	5 per cent. s. a.	17½ Avg.	10,000	119.000
Farson, Leach & Co., Chicago	Green Bay, Wis., City Hall	4 per cent. s. a.	1—20 Ser.	35,000	104.530
Harris, N. W., & Co., New York	Hornellsville, N. Y., Water	3½ per cent.	20	125,000	102.270
Stein, M. A., New York	New Hartford, N. Y.	3½ per cent.	10—20 Ser.	22,000	101.210
Thompson, Tenney & Crawford, Chicago	Port Huron, Mich	4 per cent.	10	66,000	102.541
Wilber National Bank	Oneonta, N. Y., School	5 per cent.	3 Avg.	1,700	104.235

RECENT INVENTIONS

678,335—*Fireproof Floor Construction.* Marcus I. Freeman and Clarence E. Dobbin, New York, N. Y.
678,359—*Briqueting-Machine.* John T. Davis, San Francisco, Cal.
678,377—*Motor Gear-Case for Electric Cars.* William Cox, Toronto, Can.
678,545—*Fire-Hydrant.* William W. Corey, St. Louis, Mo.
678,601—*Footboard and Guard-Rail for Street-Cars.* Frank W. Wassenich, Boerne, Tex.
678,617—*Guiding Device for Trolleys.* Anthony J. Griffin, New York, N. Y.
678,632—*Toll Apparatus for Telephone.* Edward P. Baird, Evanston, Ill.
678,761—*Car-Fender.* Lawrence P. Platt and Frank Warga, Hastings, Pa.
678,835—*Voting-Machine.* Willard M. Delavan, Pittsfield, Mass., and Wilson L. Fenn, Hartford, Conn.
678,846—*Domestic Water-Filter.* Robert T. Weaver, New York, N. Y.
678,857—*Filter.* John J. Betzold, Fresno, Cal.
678,863—*Refuse Burner.* Albert W. Cox and Davis M. Leland, Chicago, Ill.
678,873—*Electric Arc Lamp.* John A. Heany, Philadelphia, Pa.
678,894—*Trolley Signal.* Charles H. Morse, Cambridge, Mass.
678,929—*Electric Meter.* John H. Barkes and James A. Ewing, Cambridge, England.
678,975—*Car Fender.* Richard F. Preusser, Washington, D. C.
679,028—*Burglar-Proof Bar for Window Gratings.* Walter H. Larmore, Anderson, Ind.
679,049—*Fire Extinguishing Apparatus.* Henry Eversmann, Cincinnati, O.
679,169—*Driven Well Filter.* Arthur E. Hunt, Nichols, N. Y.
679,176—*Fire Alarm.* Andrew J. Linden, Hitterdal, Minn.
679,195—*Apparatus for Purifying Water or Sewage.* William G. Toplis, Philadelphia, Pa.
679,220—*Trolley.* Napoleon Durant, North Adams, Mass.
679,232—*Mold for Brick or Artificial Stone.* Solomon M. Kimble, Corunna, Mich.
679,237—*Safety Tread for Sidewalks.* Stewart Mackay, North Chelmsford, Mass.
679,286—*Street Sweeper.* James V. Allen, Ontario, N. Y.
679,449—*Holder for Ash Cans, etc.* Albert Berthe, Jersey City, N. J.
679,455—*Automatic Regulator for Smoke-Preventing Devices.* William J. Creelman, Rochester, N. Y.
679,466—*Hydrant.* John McKenzie, Troy, N. Y.
679,488—*Road Sweeping and Collecting Cart.* Louis Van Wesemael and Franciscus S'Jongers, Antwerp, Belgium.
679,459—*Water Closet.* Rowland C. Johnson and James B. Martin, Brooklyn, N. Y.
679,505—*Excavating Apparatus.* Frank K. Hoover and Arthur J. Mason, Kansas City, Mo.
679,536—*Filter.* Thomas E. McCann, Philadelphia, Pa.

WHAT OUR ADVERTISERS HAVE TO SAY

The People Who Make the Modern City Possible—They Tell Their Own Story—Information That Should Not Be Overlooked by the City Official

A ROAD ROLLER RUNS A STONE CRUSHER

THE city of Galena, Ill., has recently formed a combination in municipal appliances by which it has saved itself the price of an engine to run its stone crusher. Instead of purchasing that generally needed article it utilizes the Kelly Road Roller, owned by the city, to run the stone crusher which was recently purchased from the Austin Western Company, Ltd., Chicago, Ill. This affords an example of municipal practice and economy which it will be worth while for other cities to notice.

Improvements of roads and streets are the order of the day, and even the small villages, some of them no more than a thousand population, are purchasing road rollers and stone crushers to better local conditions. Many business men of a community are beginning to realize with the city officials that there is no better way to promote the interests of a town than to improve its streets, and also the main roads leading into a town.

The accompanying illustration shows one of the Austin Western Company's stone crushers, of a 200 yards per day capacity, operated by one of the Kelly road rollers, in the quarry of Galena, Ill.

EXHIBITS AT INTERNATIONAL CONVENTION

THE exhibits of apparatus and supplies for fire departments at the last session of the International Association of Fire Engineers, at Indianapolis, Ind., was one of the best in its history. The manufacturers took especial pains to make them attractive. They were arranged in groups in and about the Grand Hotel, the headquarters of the convention, and more than the usual interest was manifested by delegates in the appliances and their various tests.

Chief John P. Quigley, ex-president of the association, of Syracuse, N. Y., was chairman of the exhibits committee. The other members were: Chiefs George M. Kellogg, of Sioux City, Ia.; A. J. Harris, Tampa, Fla.; W. E. Roberts, Denver, Col., and George W. Miller, Reading, Pa.

The following manufacturers and dealers were represented and had exhibits: T. F. Browder & Co., Greenfield, O., manufacturers of the Browder Life Saving Net; the Automatic Coupling, invented and represented by S. W. Wallace, of Birmingham, Ala.; the New Departure Bell, for which the John H. Graham & Co., of New York City, are the general sales agents; the Hart Water Tower pipe, exhibited by Milton Hart, of the Fabric Fire Hose Co., of New York City; the Larkin Relief Valve, exhibited by Chief Larkin, of Dayton, O. and manufactured by his son, Morris Larkin, of the same city; the Spray Pipe, invented by Chief C. C. Hale, of Kansas City, and sold by the Hale Harness Company, of Kansas City; Collars and Hames exhibited by H. A. Pease & Co., of Indianapolis; the Tiller Lock, for hook and ladder trucks and apparatus, exhibited by S. F. Haywood & Co., of New York City; a general exhibition of apparatus by the Fire Extinguisher Manufacturing Company, of Chicago; Hale Harness Company, Kansas City, Mo., manufacturer of harness and spray pipes; Indiana Fire Appliance Company; Boston Woven Hose and Rubber Company, Boston, Mass., general supplies; C. Callahan Company, Boston, Mass., general supplies; Fabric Fire Hose Company, New York City; Samuel Eastman & Co., Concord, N. H., makers of the well-known nozzles of that name; Fire Extinguisher Manufacturing Company, Chicago, general apparatus manufacturer; Vajen-Bader Company, Indianapolis, Ind., maker of smoke protectors; the Seagrace Company, Columbus, O., general apparatus; C. A. Brophy, Hinsdale, Ill., uniform buttons; John W. Stake, Indianapolis, Ind., automatic ball bearing door stop; C. N. Richardson Combination Ladder Co., Providence, R. I., general apparatus; J. A. Weider Harness and Patent Collar Co., Rochester, N. Y.; the Gamewell Company, New York City, fire alarm and police telegraph systems; Ohio Brass Company, Mansfield, O., maker of the emergency hose bridge; Monarch Fire Appliance Company, 27 William street, New York, maker of Kilfyre.

GARBAGE BURNED WITHOUT FUEL

THE progressive city of Minneapolis, Minn., has recently installed one of the Decarie crematories, which has been accepted by the city authorities after a thorough trial for three months. This crematory is built upon modern principles and, according to the special committee from the Common Council, not only cremates the garbage satisfactorily, but does so without the use of fuel, maintaining in the meantime from sixty to one hundred pounds of steam. The report of the committee, which was unanimously adopted by the Common Council, was as follows:

"The members of your committee, appointed to make test of incinerators for the cremation of garbage, located at Fiftieth avenue, north, near Lyndale avenue, respectfully report that on the 8th of August we met at the crematory at 9 a. m. and found incinerator

No. 2 steamed up to ninety pounds pressure, pine edgings being used as fuel. There was also about thirty tons of garbage on the floor, which consisted of kitchen refuse, and refuse from commission houses, hotels, restaurants, etc., the conditions of which varied from moist to very wet.

"At 9:30 a. m. firing was begun and was continued for twelve hours without intermission. The steam pressure during this time ranged from sixty to 100 pounds, no fuel being used other than garbage. During this time twenty-five tons of garbage were burned and no odor was perceived to escape from the chimney.

"We therefore believe the incinerators fully comply with the guarantee of the patentee, Mr. F. L. Decarie, under whose plans and specifications they were built.

"We would, therefore, respectfully recommend the acceptance of the same by your honorable body."

The Decarie crematory is manufactured in Montreal, Canada. Officials who are interested will do well to correspond with Henry W. Atwater, manager, 455 St. Paul street, Montreal, Canada.

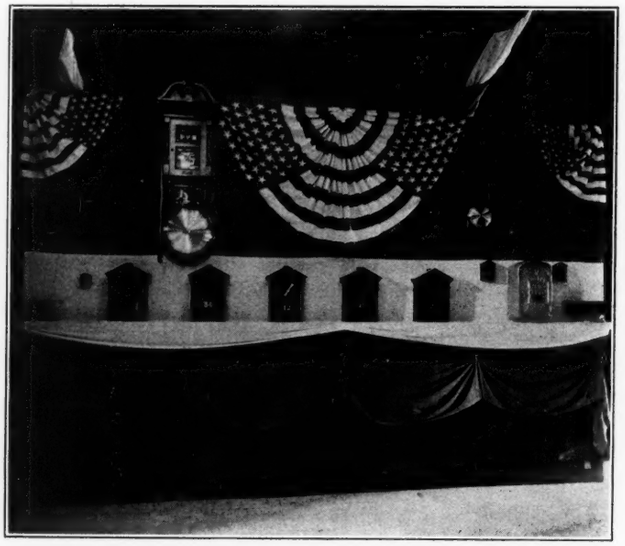
THE GAMEWELL EXHIBIT AT JAMESTOWN

THE Gamewell Fire Alarm Telegraph Company, of New York City, was present at the League Convention, at Jamestown, with a very complete exhibit of fire alarm and police signaling apparatus. The various articles were mounted upon a handsomely draped stand and attracted considerable attention from the delegates and other visitors. The exhibit consisted of new improved devices. It was demonstrated that with this apparatus two fire alarm boxes could operate at the same instant of time without any possibility of a collision of signals—a feature which caused much favorable comment. Other fire alarm boxes were also exhibited, showing how several could be operated at the same instant, and how all such boxes operated would send in their proper signals, one after the other, without any possibility of interference.

Another device used for recording signals that attracted considerable notice was a punching or perforating register. This instrument recorded the signals by means of punched holes, and not with ink-marks, as heretofore used in such instruments. This feature is an important one, inasmuch as it avoids the use of ink founts, felt wheels, etc., which are so hard to keep in perfect working order at all times.

The rapid working engine house fire alarm gong was also shown, which would signal at any degree of speed, without affecting in any way its reliability.

An improved form of keyless fire alarm box was also on view. This signal box was so arranged that a citizen could turn in a "call"



GAMEWELL EXHIBIT AT JAMESTOWN

by simply turning the handle, and was not in any danger of being misled by the ringing of the local alarm bell attached thereto, as is the case in the old style forms of keyless boxes.

In fact all of the apparatus exhibited by the Gamewell Company was of the most complete character, and attracted a great deal of favorable comment, fully sustaining the reputation for the perfection of its fire and police alarm systems.

EXHIBITORS AT THE LEAGUE MEETING AT JAMESTOWN

THE engineers, manufacturers and dealers in municipal supplies are the people who make the modern city possible. Without the combination of their effort there could be no pavements, sewers, fire departments, water works and the thousand and one things which are used for the construction and maintenance of a city of the

FABRIC FIRE HOSE EXHIBIT AT JAMESTOWN

twentieth century. It is for this reason that city officials are anxious to have exhibits at their annual conventions, and particularly at the League of American Municipalities. The increased interest in the League during the past year called out a larger representation of manufacturers and supply men than had been in attendance since its organization at Columbus in 1897.

The Gamewell Fire Alarm Telegraph Company, of New York City, occupied the largest space. The company was represented by Messrs. T. Torry and F. S. Pierce, of New York. A description of this exhibit will be found elsewhere in this issue. The Central Stamping Company, of 25 Cliff street, New York City, had one of its "Best-of All" rubbish cans, which has been adopted as the standard for the New York Cleaning Department.

* * *

Samuel Eastman & Co., of East Concord, N. H., had a fine exhibit of their nozzles, including the deluge set, which is so widely known among the American firemen. A demonstration of the power of the deluge set was given on the street, causing much favorable comment among spectators.

* * *

The Lead Lined Iron Pipe Co., of Wakefield, Mass., had an extensive line of samples for inspection, which showed this remarkable pipe to the best advantage. The concern was represented by the general manager, Mr. Thomas E. Dwyer.

* * *

The Steel Protected Concrete Company, of Philadelphia, Pa., had a section of its steel-bound concrete curb on exhibition, which, by way of contrast, brought out the inferiority of the small thin curb stone so much used in small towns and cities and at the same time its great advantages over the ordinary curb used in many cities. The company has offices, also, at 145 La Salle street, Chicago, and was represented at the convention by its president, Mr. H. A. Miner, of Chicago.

* * *

Mr. C. A. Brophy, of Hinsdale, Ill., had a large number of sample uniform buttons on exhibition.

The Jamestown Shale Brick Company had a line of samples of its products arranged for inspection outside of the City Hall. They attracted much attention, as many of the visiting city officials were deeply interested in brick pavements.

* * *

The U. S. Wood Preserving Company, of 29 Broadway, New York City, was represented by its manager, Mr. Frederic Arnold Kummer, who also presented a paper to the convention upon the subject of "Wood Pavements at Home and Abroad." A number of samples were shown to demonstrate the value of the creo-resinate filling or preservative and the superiority of wood as a paving material when properly treated. Much interest was manifested in this exhibit.

* * *

The Elliott & Hatch Company, of New York City, had one of its book typewriters on exhibition, around which was usually gathered an interested group of city officials, who expressed much wonder at the beautiful work performed by the machine. City Clerk Jones, of Jamestown, N. Y., has had one in use for several years. As Mr. Jones had the misfortune to lose one of his arms a number of years ago, great surprise was expressed at the splendid appearance of the city record books which he kept himself, although he modestly gave the credit to the machine. The company was represented by Mr. J. Willis Witwer, of Pittsburg.

* * *

As there is a growing interest in the use of the voting machine all over the United States, there was no more popular exhibit than that of the U. S. Standard Voting Machine Company, whose factory is located at Jamestown and head office at Rochester, N. Y. The good points of the machine were effectively brought out by the inventor, Mr. A. J. Gillespie, and another representative of the concern, Mr. M. L. Badhorn.

* * *

The Fabric Fire Hose Company, of New York City, was represented by Mr. W. H. Wight, who called attention to the splendid qualities of the well-known wax and gum treated fire hose. The exhibit also included a full line of fire department supplies. Aldermen and other city officials interested in the fire department were often found around this exhibit.

* * *

Studebaker Brothers' Manufacturing Company, of South Bend, Ind., was represented by Mr. T. R. Sylvanus, who distributed a large amount of printed matter and boomed the interests of this enterprising western concern.

* * *

Mr. Fred J. Warren, of the Warren Brothers Co., owners and promoters of the "Warren Bituminous Macadam Pavement," was in attendance at the convention, as he had been asked to give a paper upon the "Development of Bituminous Pavements; Embracing the Use of Coal Tar and Asphalt in Street Work." His paper called forth an interesting discussion, and he was often the center of a group of city officials who wished to become better informed about the deservedly popular new form of bituminous pavement. More than 8,000 square yards of this new pavement are now being laid in the city of the president-elect of the league, Hon. Charles S. Ashley, of New Bedford, Mass. Mr. Warren's address is 143 Federal street, Boston, Mass.

* * *

The complete and attractive catalogue of scientific publications, issued by John Wiley and Sons, of New York City, came in for its share of attention and it was not long before every one of the large number sent for distribution among the delegates was taken.

* * *

Mr. W. Oscar Shadbolt represented the Shadbolt Manufacturing Company, of 68 Flushing avenue, Brooklyn, N. Y., the makers of the well-known shadbolt wagons for carting asphalt, brick, coal, garbage, ashes, sand or any other substance that can be unloaded in bulk. It is one of the oldest and best known concerns in the United States, having been established in 1853. A superb catalogue, thoroughly illustrated, was distributed by Mr. Shadbolt, and will be sent to any address upon application.

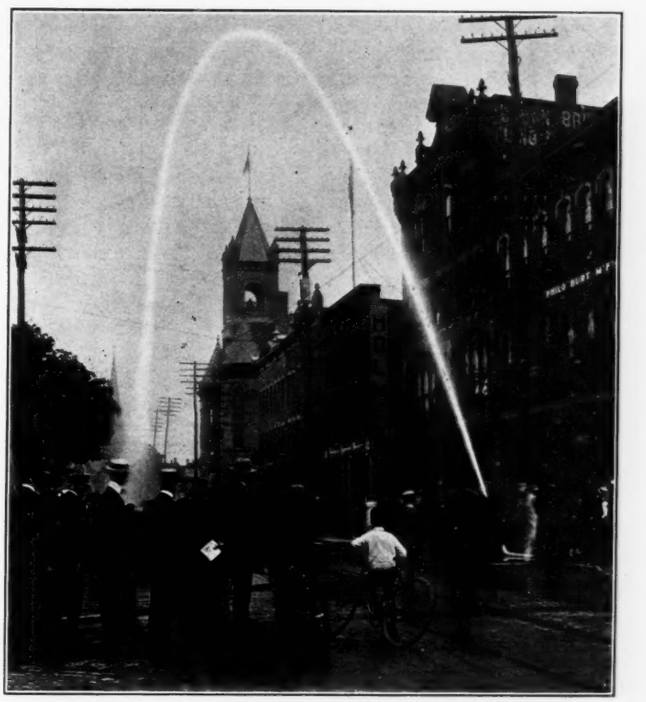
The Boulevard Globe & Lamp Company, of 136 Liberty street, New York City, had a fine catalogue, fully illustrated, showing to advantage its incandescent street lamps, which are endorsed by gas companies and city superintendents throughout the land.

* * *

The Davis Acetylene Company, 46 South Clinton street, Chicago, distributed among the delegates a well arranged and illustrated catalogue, which describes how town lighting, by the use of the Davis acetylene gas machine, was made much cheaper at a nominal cost for installation and maintenance.

* * *

The Expanded Metal Company, with branch offices in every leading city in the United States, was represented by Mr. Merrill Watson, Home Life Building, New York City, who delivered an address upon "Steel and Concrete in Municipal Construction." The address was given in the evening and was illustrated with stereopticon views. This address, together with the exhibit of expanded metal and the test of the latter which was made before the delegates in front of the city hall, attracted more than the usual amount of attention, and Mr. Watson was besieged with many questions about the use of this wonderful material.



TEST OF EASTMAN DELUGE NOZZLE AT JAMESTOWN

DEMAND FOR ROLLER BEARING AXLES

THE accompanying illustration shows a combination hose wagon equipped with Grant roller bearing axles and Archibald wheels, belonging to the Dayton, Ohio, department. Chief Larkin's first, and trial, order was on a water tower, a hook and ladder and one hose wagon. These axles proved so satisfactory that his next order for six combination wagons called for Grant roller bearings.

Chief Kendall, of Detroit, is putting them under his old apparatus, as well as specifying them on all new jobs. They are now used by most of the departments in the United States and Canada, to the entire satisfaction of every one. The benefits obtained from their use are so apparent that it seems almost useless to mention any of them. The first and greatest benefit is the wonderful reduction in the pull. There is none of that disagreeable side motion so common with friction spindles. They only need oiling three or four times a year. This

alone is certainly worth the difference in price over friction axles. As to durability, the construction is such that there can be no wear on the spindle or hub, and all wearing parts are made from the best of material, case hardened and oil tempered. After years of service the wear is almost imperceptible. Some of the first sets this company put into service, over five years ago, are to-day in perfect condition, and appear to be just as good as when first put into use.

The Grant Axle & Wheel Co., of Springfield, O., certainly has good assurance of success. It has a factory fitted with the latest improved machinery, and the demand for its goods is increasing. These axles are also suitable for buggies, carriages and broughams as well as fire apparatus and other heavy trucks.

A MODEL CATCH BASIN

THE "Standard" catch basin, made by the American Supply Company, of Cleveland, O., is being used with great success on what is known as the Clifton Road, near Edgewater Park in Cleveland. Situated on the bluff overlooking Lake Erie, peculiar conditions exist which required the installation of a catch basin of great capacity and efficiency. The authorities having the construction of the road in hand finally decided, after thorough investigation, to use the "Standard."

This catch basin is adjustable to any grade, or gutter depth, and its capacity, the case with which it can be cleaned, its symmetrical lines and its ease of adaptation to any and all conditions required determined the engineer in his choice. One of the catch basins was put to a severe test, although unintentional, which it stood with perfect satisfaction. While a twenty-two ton steam roller was being used for rolling the surface of the road, the operator carelessly allowed this ponderous machine to mount the curb and, by chance, stopped the roller just as the front rolls rested upon the catch basin cover. It required the efforts of some half dozen men, assisted by jack screws, to liberate the unruly roller, when it was discovered that the "Standard" cover had come out of the encounter without a scratch.

TRADE NOTES

—The Seagrave Company, of Columbus O., is rushed with orders for hose reels, hook and ladder trucks, etc. Recent orders have been filled for Ada, Minn.; Butte, Mont.; Ashtabula, O., and many other cities in the North, South, East and West.

—"The Utica" fire extinguisher is one of the best on the market. It has been endorsed by the Boston Manufacturers' Mutual Fire Insurance Company as thoroughly reliable. It is manufactured by the O. J. Childs Company, 48 Liberty street, Utica, N. Y.

—The Goodyear Tire and Rubber Company, of Akron, O., is having great success with its vehicle tire. The company recently closed a contract with the New York Electric Vehicle Transportation Company to equip its line of cabs at an expense of over $50,000.

—For excellent service in the typewriter line it would be a difficult matter to excel the work turned out by the Smith Premier typewriter, manufactured by the Smith Premier Typewriter Company, of Syracuse, N. Y., from whom descriptive circulars can be obtained for the asking.

—Holgate, O., city authorities have just placed an order with the Stilwell-Bierce & Smith-Vaile Company, of Dayton, O., for a nice little outfit of pumps. It includes two Smith-Vaile deep well pumps of 300,000 daily capacity each, and a general service pump of 500,000 gallons daily capacity.

—The "Catch Basins" of The American Municipal Supply Company, Cleveland, O., are among the "none better" class. This company makes everything in the standard adjustable drainage goods line, and it will be to the advantage of city officials interested to send for circulars and price-lists.

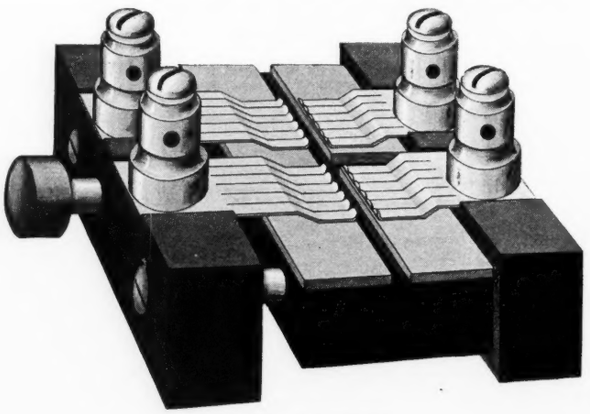
—The Superintendent of Police Diehl, of Harrisburg, Pa., is well pleased with some instruments recently installed by the Ericsson Telephone Company, of New York City. In referring to them the other day he said: "These instruments were purchased for private work, but they have been tested on our regular police system and found to work superior to our regular instruments."

—"The Miner" adjustable angle street sign, which is illustrated elsewhere in this number, is well adapted for use in the modern city. The great fault with American cities is that it is difficult to find one's way about on account of the absence of street signs. The appliances manufactured by Thos. T. W. Miner, 821 Eagle avenue, New York City, will assist any city in remedying this common fault.

—The Sprague Electric Company has been obliged to run the New York factory at night for some time to meet the demand for its flexible conduits for interior wiring. The new flexible products are very popular and will continue the reputation for superiority that the Sprague Company's conduits always have enjoyed. The superior qualities of the Greenfield Flexible Steel Armored Conductors and cords are simplicity of installation, thorough protection of wire and insulation from mechanical and other injury, and high grade insulation at low cost.

—Mr. T. Hugh Boorman, who for many years was the General Manager of the Asphalt Co., of France, in the United States, has, we are informed, since February 1st, been actively engaged in securing the control of asphalts which can be sold to independent contractors wishing to do work in their own municipalities. (A card in this issue states that he is now prepared to sell Trinidad, California or Rock Asphalt for paving purposes). He has the Eastern control of three refineries and of an asphalt roofing factory. He will correspond with any firms wishing to secure material for independent asphalt contracting work, either in paving, flooring, roofing or damp-proof construction.

—The Commissioner of Public Safety of Syracuse, N. Y., has equipped the city's fire alarm boxes with the Miller "cut-out," a device to prevent the boxes from being burned out when the wires of the fire alarm system become crossed with trolley or electric light wires. This "cut-out," which is the invention of Louis W. Miller, Superintendent of the Police Telegraph Bureau, of Rochester, N. Y., has been in use in the police telegraph and fire alarm boxes of Rochester for four years, and during that period not a single box has been burned out. Previous to the installation of this device it was a frequent occurrence for a dozen or more boxes to burn out during a storm. The device has been endorsed by the National Board of Fire Underwriters, and is in use in several cities throughout the country. The device not only prevents the boxes from burning out, but it insures the prompt transmission of alarms, as the boxes are always in good working order.



THE MILLER CUT-OUT

—The Seagrave Company, of Columbus, Ohio, recently sold a combination wagon to the Akron, Ohio, fire department that was a beauty in every sense of the word. It is fitted with 100 feet of ladders, 1,000 feet of hose and a chemical engine with forty gallons' capacity and 150 feet of chemical hose.

—The Eagle Velocipede Works, of Frankfort, Germany, has constructed an automobile fire-engine. It has a speed of eleven miles per hour and carries four men.

—Bradford, England, has adopted the "Gamewell" system of electric fire alarms. Seventy-five alarms and call boxes will be erected and thirty-three and one-half miles of cable laid.